

# LEARN or LOSE

INAUGURAL LECTURE - 25 NOVEMBER 2016

PROF. DR. NICK H.M. VAN DAM

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Nick has a passion for people development and is excited about helping individuals to reach their full potential. He strongly believes that lifelong learners are more successful professionally and lead happier, more fulfilling lives. Nick is keenly interested in the emerging insights from the fields of positive development including: Psychology, Sociology, Cognitive Neuroscience, Andragogy and Philosophy. These all have enormous potential to transform people development and to lead to the creation of healthy, humanly sustainable organizations. Nick studied Economics, Business Economics and Pedagogy (Vrije Leergangen – Vrije Universiteit van Amsterdam), Organizational Sociology (Universiteit van Amsterdam) and earned his Doctorate of Philosophy (Ph.D., Human Capital Development) at Nyenrode Business Universiteit.

He started his career in 1986 as a training consultant at (Siemens-) Nixdorf. In 1995, he joined Deloitte Consulting in the USA and served for 19 years in international Consulting/ Learning & Development/Human Resources executive roles. Currently he is a partner, Global Chief Learning Officer and Client Advisor at McKinsey & Company. Nick is a visiting professor and advisory board member at the University of Pennsylvania's, PennCLO Executive Doctorate Program. He is a board member of ICEDR, the world's premier network in global talent management. In 2016, he joined the Corporate Advisory Board of edX which is a non-profit organization founded by Harvard and MIT, with a mission to bridge the gap between education and employment.

Nick has (co)authored 17 books and is an internationally known thought leader in Human Capital Development. Nick has written many articles and has been quoted by *The Financial Times*, *The Wall Street Journal*, *Fortune Magazine*, *Business Week*, *Harvard Business Review*, *The India Times*, *Information Week*, *Management Consulting*, *CLO Magazine*, and *T+D Magazine*. Under the patrons of the European Parliament Federal Ministry of Education & Research, he received 'The 2013 Leonardo European Corporate Learning Award' for *shaping the future of organizational learning and leadership development*.

He is the Founder and Chairman of e-Learning for Kids ([www.e-learningforkids.org](http://www.e-learningforkids.org)), a global non-profit foundation that offers free, digital lessons for underserved elementary school aged children worldwide.

# LEARN OR LOSE INAUGURAL LECTURE

Abridged version given in acceptance of the  
Professorship in Corporate Learning and Development  
at Nyenrode Business Universiteit on Friday 25 November 2016

By Nick H.M. van Dam

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# INTRODUCTION

*By three methods we may learn wisdom:  
first, by reflection, which is the noblest;  
second, by imitation, which is the easiest;  
and third by experience, which is the bitterest.*

Confucius

*Dear esteemed Rector Magnificus,  
Dear esteemed Dean,  
Dear distinguished guests and valued students,  
Dearest family and friends,*

I feel very humbled and honoured to deliver this inaugural lecture on the occasion of formally accepting the appointment as Professor of the new academic chair Corporate Learning and Development (L&D). This is the field of study where I began my career 31 years ago. I am convinced that this is *the* most exciting time to be in this field.

As you have noticed, the title of my inaugural lecture is *Learn or Lose* and you probably have the expectation of learning something new today. Today's format is a lecture and most scientists agree that pure lectures are not necessarily that effective from a learning perspective.

FIGURE 1: ATTENTION CURVE OF STUDENTS IN LECTURES



Source: Bligh, 1998

As you can see in this graph the attention span of students typically drops sharply after 10 minutes and only recovers somewhere near the end of a 60

minute lecture. At that time students might start thinking about the coffee break. Other research<sup>1</sup> suggest that people generally remember as little as 10-20% of what they either hear or read.

The good news is that there are many things that one can do to spice up a lecture in order to retain the attention of the audience, including having a clear storyline, providing context, telling stories, making the lecture visually attractive, showing videos, engaging more senses, involving the audience, and making a lecture more interactive by using various technologies. In preparing for this inaugural lecture, I challenged myself to make sure that you will be intellectually engaged during the coming 60 minutes and that you'll also learn something new.

FIGURE 2: DESIRED ATTENTION CURVE OF STUDENTS DURING A LECTURE



Source: Bligh, 1998

During this lecture, I will take you on a Learn or Lose journey and share my vision for the future of learning and development.

The topics of my inaugural lecture are:

- Disruption Ahead
- The Future of Jobs
- The Inconvenient Truth about Lifelong Learning
- A Call to Action: Learn or Lose!
- In Conclusion
- The Chair Agenda
- Words of Thanks

First, I will discuss enhancements in technologies over time and the implications of these developments for companies during the Fourth Industrial Revolution. Second, I will explore the impact of this on current and future jobs and skills. Third, I will highlight a number of challenges with lifelong learning practices. Fourth, I will propose a call to action for companies to embrace lifelong learning strategies and for individuals to become lifelong learners.

I will conclude by describing my academic chair and my areas of future research. An extended version of this lecture, which includes more examples and facts, is captured in a small book which you'll receive at the end of my lecture.

# DISRUPTION AHEAD

*Change is the law of life. And those who look only to the past or present are certain to miss the future.*

John. F. Kennedy

I am proud to be the second generation of my family who has worked in the township 'Breukelen – Nijenrode'. My great-great-grandfather Matijs van Dam (1763-1823) who lived about 200 years ago, was a so called *day labourer* (in Dutch *dagloner*) and was paid for each day that he worked in agriculture. In the Netherlands today, we would have called him a *zzp-er* or in English a contractor or free agent. Matijs grew up in a largely agricultural society. Around 1810 in the Netherlands, an estimated 45% of a population of 2 million people worked in agriculture. The Netherlands had been one of the wealthiest modern economies of the world, but due to a crippling public debt and geo-political factors it lost this position between 1800-1850.

FIGURE 3: NYENRODE AT THE TIME OF MATIJS VAN DAM (1763 – 1824)



Source: Jacobus Schijnvoet

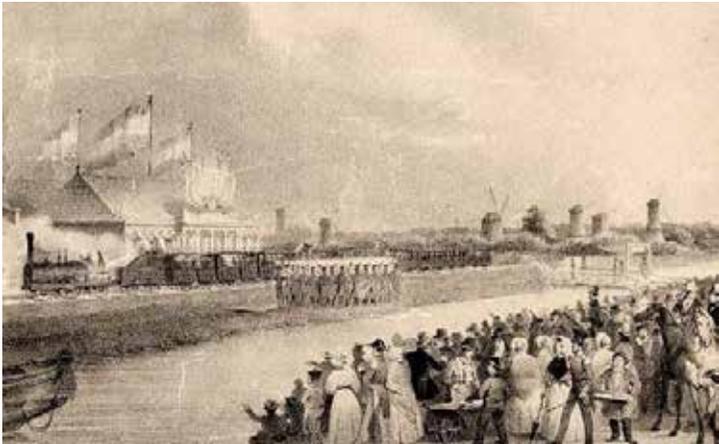
Matijs lived during a time of significant change. He was the witness of six tumultuous historical stages of governance, including:

- De Republiek van de Zeven Verenigde Nederlanden (1588– 1795);
- De Bataafse Republiek (1795–1801)
- Het Bataafs Gemenebest (1801–1806)

- Het Koninkrijk Holland (1806–1810)
- Het Eerste Franse Keizerrijk (1810–1813)
- Het Koninkrijk der Nederlanden (1813/1815–today)

Relatively shortly after the establishment of the Kingdom of the Netherlands, Belgium separated from the Kingdom of the Netherlands.

**FIGURE 4: THE FIRST INDUSTRIAL REVOLUTION: MECHANIZATION & STEAM POWER**



Matijs lived at the beginning of the *First Industrial Revolution in Britain* (est. 1760–1840), which spread internationally.

This period was driven by technology inventions, particularly the steam engine, which improved the way that machines could be operated. A strategic application of the steam engine was the steam locomotive which was invented in 1804. The first railway line opened in the Netherlands in 1839 and the expansion of the railway net was another motor behind industrialization. The mechanization of agriculture resulted in a growth of a number of new factories for example: sugar factories, potato factories, flour factories,

and strawboard factories. Agriculture continued to be the biggest economic sector in the Netherlands during the 19<sup>th</sup> century. However the industrialization also fueled the rise of other industries such as the textile industry, machine industry, leather-shoe industry, and the cigar industry, to name a few. And these developments demanded new skill sets from the labourers.

A consequence of the First Industrial Revolution in the Netherlands was that handmade crafts businesses could not compete with the products from the factories and closed down. Former craft workers (including women and children) tried to find jobs at factories. Thus, the supply of labour exceeded the demand which resulted in very low wages for long hours of work. And this produced a growing gap between the rich and the poor.

**FIGURE 5: THE SECOND INDUSTRIAL REVOLUTION: MASS PRODUCTION & ASSEMBLY LINE**



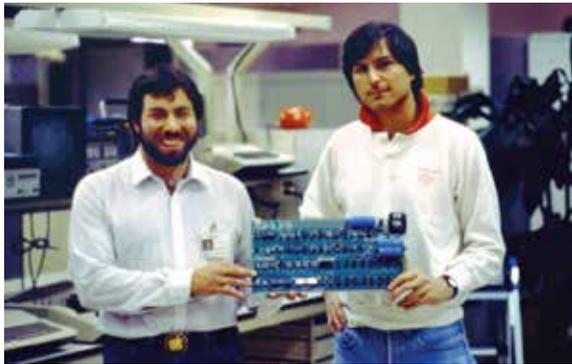
Source: Movie *Modern Times*, Charlie Chapin, 1936.

The Second Industrial Revolution (1870-1914), also known as the Technological Revolution started in the final third of the 19<sup>th</sup> century, when new technologies brought mass production and rapid industrialization accompanied by the introduction of assembly lines and electrification.

Many more factories were built during the Second Industrial Revolution and new jobs were created for people to work on machines. However, existing work was replaced as well. For example, agriculture machines increasingly replaced the work formerly done by people and animals.

Workers in factories experienced a challenging life. They typically worked 10 hours a day, 6 days a week, and the working conditions were often unsafe and most work was drudgery. In the famous movie *Modern Times* (1936), Charlie Chaplin portrays the manic pace of the factory worker on an assembly line. The film well depicts the employment conditions that were created by the Second Industrial Revolution.

#### FIGURE 6: THE THIRD INDUSTRIAL REVOLUTION: COMPUTER & AUTOMATION



Source: picture Steve Jobs and Steve Wozniak

The Third Industrial Revolution (1960–1990) brought mainframe computers (1960), personal computing (1970s and 1980s), and the Internet (1990s). This revolution altered the interaction between individuals and companies. Technological advancement placed pressure on the traditional middle class who worked in *transaction* jobs. For example, the following jobs declined between 1970 – 2010 because of automation: general clerks (-37%); bookkeeping jobs (-43%); secretaries (-59%); typists (-80%); and

telephone operators (-86%).<sup>2</sup> On the other hand, a lot of non-transactional and non-production jobs were created that required complex problem solving skills, significant experience, and specific contextual knowledge, e.g. software developers, computer designers, pc network specialists, printer technicians, and IT consultants.

**FIGURE 7: THE FOURTH INDUSTRIAL REVOLUTION: CYBER PHYSICAL SYSTEMS**



Source: [www.jllrealviews.com](http://www.jllrealviews.com).

Today, we are at the beginning of the Fourth Industrial Revolution (2012- ), which can be described as the advent of “cyber-physical systems” involving entirely new capabilities for people and machines. A cyber-physical system can be defined as a mechanism controlled or monitored by computer-based algorithms, tightly integrated with internet and its users. This revolution is fueled by smaller and more powerful sensors, the mobile internet, machine learning, and artificial intelligence.

The Fourth Industrial Revolution was the theme of the 2016 World Economic Forum (WEF) in Davos. Professor Klaus Schwab, the founder and executive chairman of the WEF, has published a book on this topic.

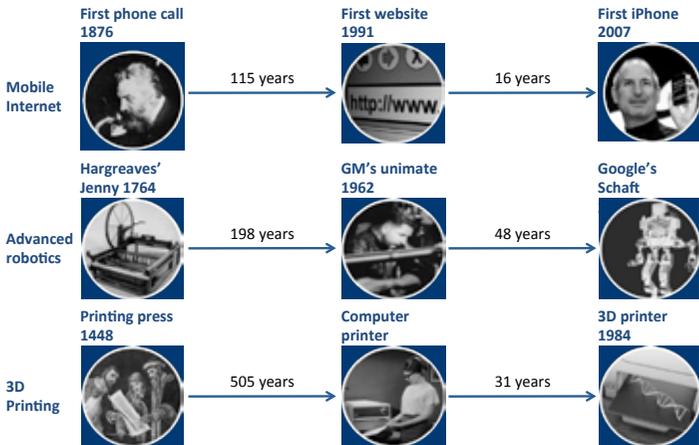
Some people refer to this revolution as a combination of Industry 4.0 and Smart Services. Others combine the trends of the Third and Fourth Industrial Revolution and continue to call it the Third Industrial Revolution or the Digital Revolution.

Schwab (2016) identified three reasons how the Fourth Industrial Revolution is different from the Third Industrial Revolution:

- *Velocity* – This revolution is exponential rather than linear.
- *Breadth and depth* – It builds on the Third Industrial Revolution and combines multiple technologies that are leading to unprecedented paradigm shifts in the economy, business and society.
- *System impact* – It involves the transformation of entire systems, across and within countries, companies, industries and society as a whole.

The Fourth Industrial Revolution is driven by advancements in technologies that have a significant potential to cause disruption. Over history we have seen that technological breakthroughs are speeding up.

**FIGURE 8: THE BREAKTHROUGH OF TECHNOLOGIES IS SPEEDING UP**



Source: McKinsey Global Institute analysis, 2016.

The adoption of new technologies is also accelerating. For example, the time it took for an invention to reach 50 million users globally was for radio 38 years, TV (13 years), iPod (4 years), Internet (3 years), Facebook (1 year), Twitter (9 months), Angry Birds (35 days) and Pokémon GO (19 days).<sup>3</sup>

McKinsey Global Institute (2013) researched and identified twelve potential economically disruptive technologies.

TECHNOLOGY	ILLUSTRATED GROUPS, PRODUCTS AND RESOURCES THAT COULD BE IMPACTED
<p><b>Mobile Internet</b> Increasingly inexpensive and capable mobile computing devices with Internet connectivity</p>	<p><b>4.3 billion</b> People remaining to be connected to the Internet, potentially through the mobile Internet. <b>1 billion</b> Transaction and interaction workers, nearly 40% of the workforce</p>
<p><b>Automation of Knowledge Work</b> Intelligent software systems that can perform knowledge work tasks involving unstructured commands and subtle judgments</p>	<p><b>230+ million</b> Knowledge workers, 9% of global workforce <b>1.1 billion</b> Smartphone users, with the potential to use automated digital assistance apps</p>
<p><b>The Internet of Things</b> Networks of low cost-sensors and actuators for data collection, monitoring, decision making, and process optimization</p>	<p><b>1 trillion</b> Things that could be connected to the Internet across industries such as manufacturing, health care, and mining <b>100 million</b> Global machine to machine device connections across sectors such as transportation, security, health care, and utilities</p>
<p><b>Cloud Technology</b> Use of computer hardware and software resources delivered over a network or the Internet, often as a service</p>	<p><b>2 billion</b> Global users of cloud-based email services like Gmail, Yahoo, and Hotmail <b>80%</b> North American institutions hosting or planning to host critical applications on the cloud</p>
<p><b>Advanced Robotics</b> Increasingly capable robots with enhanced senses, dexterity, and intelligence used to automate tasks or augmented humans</p>	<p><b>320 million</b> Manufacturing workers, 12% of global workforce <b>250 million</b> Annual major surgeries</p>

<p><b>Autonomous and Near-autonomous Vehicles</b> Vehicles that can navigate and operate with reduced or no human intervention</p>	<p><b>1 billion</b> Cars and trucks globally <b>450.000</b> Civilian, military, and general aviation aircraft in the world</p>
<p><b>Next-generation of Genomics</b> Fast, low cost gene sequencing, advancing big data analytics, and synthetic biology</p>	<p><b>26 million</b> Annual deaths from cancer, cardiovascular disease, or type 2 diabetes. <b>2.5 billion</b> People employed in agriculture</p>
<p><b>Energy Storage</b> Devices or systems that store energy for later use, including batteries</p>	<p><b>1 billion</b> Cars and trucks globally <b>1.2 billion</b> People without access to electricity</p>
<p><b>3D Printing</b> Additive manufacturing techniques to create objects by printing layers of material based on digital models</p>	<p><b>320 million</b> Manufacturing workers, 12% of the global workforce. <b>8 billion</b> Annual number of toys manufactured globally</p>
<p><b>Advanced Materials</b> Materials designed to have superior characteristics (e.g., strength, weight, conductivity) or functionality</p>	<p><b>7.6 million</b> tons Annual silicon consumption <b>45,000</b> metric tons Annual global carbon fibre consumption</p>
<p><b>Advanced Oil and Gas Exploration and Recovery</b> Exploration and recovery techniques that make extraction of unconventional oil and gas economical</p>	<p><b>22 billion</b> Barrels of oil equivalent in natural gas produced globally. <b>30 billion</b> Barrels of crude oil produced globally</p>
<p><b>Renewable Energy</b> Generation of electricity from renewable sources with reduced harmful climate impact</p>	<p><b>21,000</b> TWh Annual global electricity consumption <b>13 billion</b> tons Annual CO<sub>2</sub> emissions from electricity generation, more than from all cars, trucks and planes</p>

In 2016, The World Economic Forum published the top technological drivers of change including the expected timeframe of impact.<sup>4</sup>

The list overlaps significantly with the technologies mentioned before and includes:

1. Mobile Internet and cloud technology (2015-2017)
2. Advances in computer power and big data (2015-2017)
3. New energy supplies and technologies (2015-2017)
4. The Internet of Things (2015-2017)
5. Crowdsourcing, the sharing economy and peer-to-peer platforms (impact felt already)
6. Advanced robotics and autonomous transport (2018-2020)
7. Artificial intelligence and machine learning (2018-2020)
8. Advanced manufacturing and 3D printing (2015-2017)
9. Advanced materials, biotechnology and genomics (2018-2020)

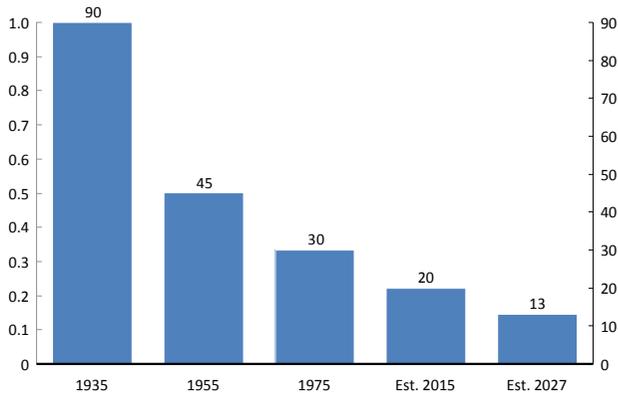
It is important to understand the timing at what time technology applications will have a major impact. These tipping points are *“moments when specific technology hits mainstream society shaping the future digital and hyper-connected world.”*<sup>5</sup>

The list of expected tipping points in application of different technologies that are expected to occur by 2025 include, for example (WEF, 2015):

PREDICTION	LIKELIHOOD THAT THIS WILL HAPPEN AS A %
10% of people wearing clothes connected to the Internet	91.2%
90% of people having unlimited and free storage of data	91.0%
1 trillion sensors connected to the Internet	89.2%
The first robotic pharmacist in the USA	86.5%
10% of reading glasses connected to the Internet	85.5%
5% of consumer goods printed in 3D	81.1%
90% of the population using smartphones	90.7%
Driverless cars equalling 10% of cars on US roads	78.2%

New technologies can have an impact on economic growth, as well as having the capacity to disrupt. The early 20<sup>th</sup> century economist Joseph Schumpeter (1883-1950) studied the formation and bankruptcy of companies in Europe and the United States. He concluded that significant advances in industries are accompanied by a process of *creative destruction*, which shifts profit pools, rearranges industry structures, and replaces incumbent businesses.<sup>6</sup> Schumpeter believed that “*economic progress, in capitalist society, means turmoil.*” Professor Richard Foster, a professor at Yale and a former McKinsey consultant, applied Schumpeter’s theory to modern practices of management and innovation in his book *Creative Destruction* (2001).

Foster studied the lifespan of the most prestigious companies listed on the Standard & Poor top 500 list.

**FIGURE 9: COMPANIES' LIFESPAN HAS DECLINED DRAMATICALLY OVER TIME**

Source: Foster, 2012

He noticed that the lifespan of companies has dramatically declined from 90 years in 1935 to 18 years in 2011. He predicts that the lifespan of an S&P 500 company in 2027 will be 13 years or less. This doesn't mean necessarily that all companies will land in the graveyard in 13 years, but that they might split, merge or be acquired and disappear from the S&P 500.

According to Foster, (2001) the lifespan of a corporation is determined by balancing three management imperatives: 1) running operations effectively; 2) creating new businesses which meet customer needs; and 3) shedding business that once might have been core but no longer meets company standards for growth and return.

The challenge is the dilemma that corporations need to innovate in order to create new businesses, but that investment in innovation often conflicts with (short-term) operational effectiveness. The outcome is that large corporations are not aligning themselves fast enough with a changing external environment and slowly fall behind and disappear.

The implication for employees is that that concept of *lifetime employment* or just working for a few companies doesn't exist anymore. Furthermore, the Fourth Industrial Revolution will dramatically change the skills required of the workforce. People need to prepare themselves to work for a number of companies during their careers, and need to make sure that they acquire skillsets and experiences that are valuable in the market.

The greatest difference between the Fourth Industrial Revolution and the prior Third Industrial Revolution is the ubiquitous involvement of everyone and everything, and the velocity of change.



# THE FUTURE OF JOBS

*The best way to predict the future  
is to invent it.*

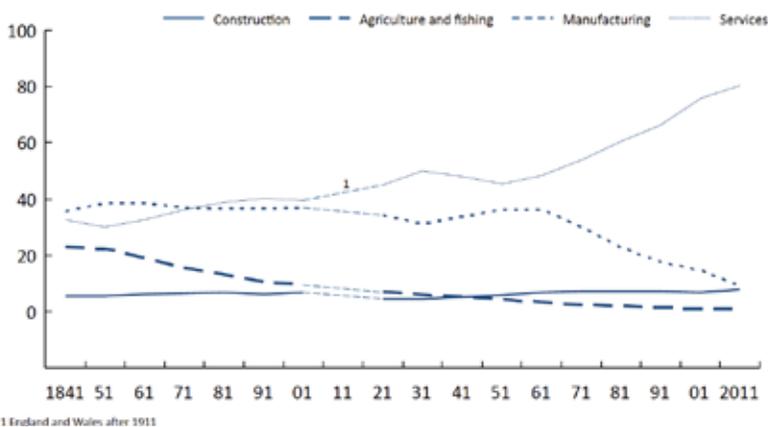
Alan Kay

*“There’s never been a better time to be a worker with special skills or the right education, because these people can use technology to create and capture value. However, there’s never been a worse time to be a worker with only ‘ordinary’ skills and abilities to offer, because computers, robots and other digital technologies are acquiring these skills and abilities at an extraordinary rate.”*<sup>7</sup>

–Erik Brynjolfsson and Andrew McAfee, MIT Initiative on the Digital Economy.

Many of the new technologies are disrupting labour markets. Advancements in technologies and new business models are expected to have a profound impact on existing and future jobs, from job creation to job displacement. This has also happened during the First, Second, and Third Industrial Revolution where jobs were eliminated in one sector (such as agriculture) and new work was created in other sectors such as manufacturing and services.

**FIGURE 10: JOBS COME AND GO: SHARE OF EMPLOYMENT IN BRITAIN BY INDUSTRY, %**



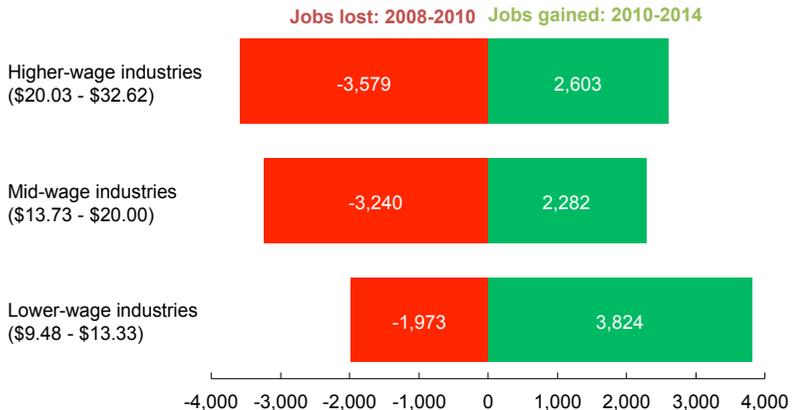
Source: ONS & economist.com, 2016

Internationally, jobs are not only threatened by technologies such as robotics, but also by declining demand in many industries along with outsourcing (domestic or international). For example, in 2015 about 2.3

million jobs in the US were outsourced internationally.<sup>8</sup> Some researchers claim that outsourcing can help retain jobs or even create new ones in the country of origin for example jobs with a higher level of complexity.<sup>9</sup>

During the Great Recession (2008-2010) 8,792,000 jobs were lost in the private sector in the US and 8,709,000 new jobs have been gained between 2010 and 2014. However, the middle- and higher income jobs were replaced by low-income jobs.

**FIGURE 11: NET CHANGE IN PRIVATE-SECTOR EMPLOYMENT (IN THOUSANDS)**



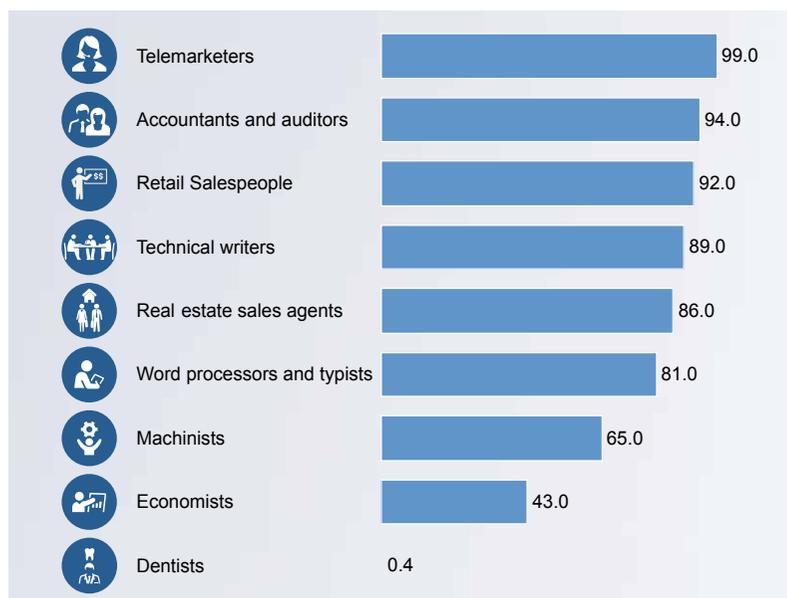
Source: Nelp.org, 2015.

Historically, different economists have been concerned about the impact of technology on the workforce. The economist David Ricardo (1772 – 1823) commented that the deployment of machinery would have a devastating impact particularly on the labouring class.

John Maynard Keynes (1883-1946) predicted widespread technology-driven unemployment “due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour.”<sup>10</sup>

The new generation of technologies which are being deployed in the Fourth Industrial Revolution will have the potential to threaten jobs which previously were not impacted by technologies. A study from Oxford University (2013) predicts that 47% of all jobs in the United States have a 70% probability of disappearing over the next 2 decades.

**FIGURE 12: HOW VULNERABLE ARE JOBS TO COMPUTERIZATION**

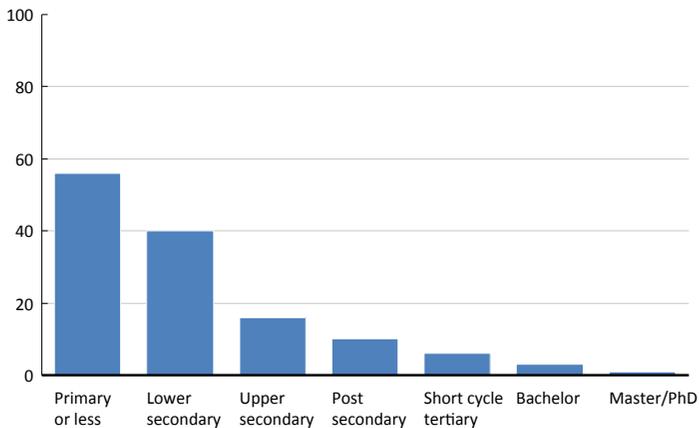


Source: Frey & Osborne, 2013.

Other studies (Bowles, 2014) finds the share of jobs that are vulnerable to automation in Europe ranges between 45% to more than 60%, with the Southern European workforce facing the highest exposure to potential automation. Employers in the Netherlands expect that 22% of existing jobs will be automated over the next three decades (ING, 2016). However, Dutch employees are more sombre and anticipate that 37% of jobs will be displaced by 2046. An OECD report<sup>11</sup> is more optimistic and predicts that just 10% of the work in the Netherlands has a high risk of being automated.

The OECD researchers claim that the threat from technological advances seems less because they take into account the heterogeneity of workers' tasks within occupations, compared to using the occupation-based approach. A 2015 McKinsey Global Institute study<sup>12</sup> also looked at job activities versus occupations. They concluded that current demonstrated technologies could automate 45% of the *activities* people are paid to perform and that about 60% of all occupations could see 30% or more of their activities automated. The OECD signals a very high chance of automatability of jobs now held by less skilled people and people with lower incomes.

**FIGURE 13: SHARE OF WORKERS AT HIGH RISK OF AUTOMATABILITY BY LEVEL OF EDUCATION**



Source: OECD, 2016

The World Economic Forum conducted research (2015) of the shorter-term impact of automation and digitization on global employment. Their research among 15 major developed and emerging economies (excluding China) suggests that the global net employment outlook 2015-2020 will be negatively impacted by more than 5.1 million jobs.

Net employment will decrease by 7.1 million jobs in a number of job families while the WEF expect an increase of 2 million jobs among other job families.

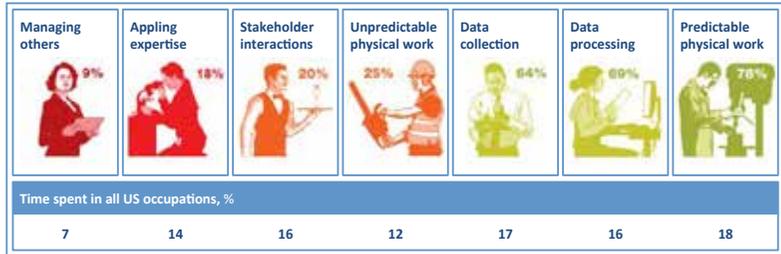
**NET EMPLOYMENT OUTLOOK BY JOB FAMILY, 2015-2020**  
(15 COUNTRIES, EXCEPT CHINA)



Source: WEF, 2016

The McKinsey Global Institute (2016) conducted a detailed analysis<sup>13</sup> of 2,000 plus work activities for more than 800 occupations in the US. They examined the technical feasibility of occupational activities being automated using currently demonstrated technologies.

**FIGURE 14: TYPES OF ACTIVITIES THAT HAVE THE TECHNICAL POTENTIAL TO BE AUTOMATED**



Source: McKinsey Global Institute, 2016

Occupations are made up of different types of activities which vary in their potential of becoming automated. Also, the total time that people spend on activities in different occupations varies. About one-fifth (18%) of the time spent in the US workplace includes predictable physical activities, which are highly vulnerable for automation. There are also significant differences by sector, e.g. performing physical activities represents one third of people's time in manufacturing. About 73% of activities workers perform in food services and accommodation industry have the potential for automation. Think about machines that can bake hamburgers, self-service ordering and robotic servers. In finance and insurance – about 50% of time is devoted to collection and processing data where the potential for automation is high. It is anticipated that there will be significant changes in employment by industry and industry sub-sector. Citigroup (2016), an American multinational investment bank, is forecasting that US and European Banks will cut staff by more than 30% over the next decade. Healthcare's potential for automation is about 36%, but this is much lower for the professionals whose daily activities require expertise and direct contact with patients.

In conclusion – the research reports indicate that the advancement of technologies will have an impact on the displacement of jobs. However, they differ in percentage of replacement (e.g. from 10% to about 49%), changes by economies (e.g. the Netherlands versus Japan), the pace of impact (short-term versus medium-, or longer-term) and entire jobs versus specific activities by job.

There are many factors<sup>14</sup> which predict whether jobs can be automated including: the technical feasibility; the costs of developing and utilizing the hardware and software for automation; the costs of labour and related supply-and-demand dynamics; the benefits of automation beyond labour substitution including higher levels of output, better quality, fewer errors; and regulatory and social acceptance issues. However, it is expected that if current technology continues in its exponential development, there will be an increase in the potential of automation.

## **CHANGE IN SKILLS**

Most of the technologies discussed in the prior sections, have already had a significant impact on employee skills. This is particularly true in the case of the mobile internet, cloud technology, processing power, big data, new energy supplies and technologies, the sharing economy, and crowdsourcing. Other technologies are expected to have a more profound impact between 2018 – 2025 including: the Internet of Things; robotics; autonomous transport; artificial intelligence; advanced manufacturing; 3D printing; advanced materials and biotechnology.

The acceleration of technology will shorten the shelf life of existing knowledge, expertise and skills, and require different competencies which need to be developed. For example, as specific activities of jobs become automated, people will be required to focus on new activities which require different skills. Technological skills will experience the fastest change.

An estimate of 50% of subject knowledge obtained during the first year of a four year technical degree program is outdated by the time of graduation<sup>15</sup>. Beyond technical skills or hard skills, employers are equally concerned about work-related practical skills like content creation or judging the relevance and purpose of information, which are also likely to be subject to significant change in the coming years.

## THE IMPORTANCE OF WORK-RELATED SKILLS

SKILLS FAMILY	GROWING SKILLS DEMAND IN 2020	% OF JOBS WHICH REQUIRE THIS SKILL BY 2020
Cognitive Abilities	52%	15%
System Skills	42%	17%
Complex Problem Solving	40%	36%
Content Skills	40%	10%
Process Skills	39%	18%
Social Skills	37%	19%
Resource Management Skills	36%	13%
Technical Skills	33%	12%
Physical Abilities	31%	4%

Source: WEF, 2016

Over one third of jobs demand *complex problem solving* as one of the core skills. *Social skills*, which include coordination with others, emotional intelligence, service orientation, negotiation and persuasion – are required in one out of 5 jobs. *Cognitive skills*, such as creativity and mathematical reasoning see the fastest growth in demand. These skills are needed in 15% of the jobs.

### **The top 10 skills in 2020**

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgement and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

Creativity will become one of the top three skills workers need. With the avalanche of new products, new technologies, and new ways of working, people need to become more creative in order to benefit from these changes.

It is estimated that by 2020, more than *a third* of the desired core skillsets of occupations will be comprised of skills that are not yet deemed crucial for the job today (WEF 2016).

Finally, the Fourth Industrial Revolution is also referred to as *The Digital Age* which necessitates that people develop digital competencies. The EU argues that “*there is a need for digital skills for nearly all jobs where technology complements existing tasks. In the near future 90% of jobs will require some level of digital skills*”.<sup>16</sup>

In 2015, almost half (44.5%) of the EU population aged 16-74 had insufficient digital skills to participate in society and the economy.<sup>17</sup> In the workforce (employed and unemployed), this figure is more than a third (37%). Not having the necessary digital competencies has direct consequences for employability.

In the EU, 42% of people with no computer skills are inactive in the labour market and many people are at risk of social exclusion and most likely deprived from e-government, e-health, e-banking, etc.<sup>18</sup>

The EU has developed a Digital Competence Framework which is a tool to improve citizens' digital competence, help policy makers to formulate policies that support digital competence building, and to plan education and training initiatives to improve digital literacy.<sup>19</sup>

The Digital Competence Framework includes 5 competency areas, 21 competencies, and descriptors of three proficiency levels (basic, intermediate and proficient).

**FIGURE 15: OVERVIEW OF A DIGITAL COMPETENCE FRAMEWORK**

Competence areas	Competencies	
	<b>1. Information</b>	1.1 Browsing, searching, and filtering information 1.2 Evaluating information 1.3 Storing and retrieving information
	<b>2. Communication</b>	2.1 Interaction through technologies 2.2 Sharing information and content 2.3 Engaging in online citizenship 2.4 Collaborating through digital channels 2.5 Netiquette 2.6 Managing digital identity
	<b>3. Content creation</b>	3.1 Developing content 3.2 Integrating and re-elaborating 3.3 Copyright and Licences 3.4 Programming
	<b>4. Safety</b>	4.1 Protecting devices 4.2 Protecting data and digital identity 4.3 Protecting health 4.4 Protecting the environment
	<b>5. Problem solving</b>	5.1 Solving technical problems 5.2 Expressing needs and identifying technological responses 5.3 Innovating, creating and solving using digital tools 5.4 Identifying digital competence gaps

Source: EU, 2014.

## NEW JOBS

The *Fourth Industrial Revolution* requires a workforce with a wide range of deep knowledge and skills which can easily transition into new jobs.

It is an interesting observation that 65% of children who are currently admitted into elementary school might ultimately work in jobs that don't exist today (WEF 2016). This illustrates that it is unknown what future jobs will look like.

A number of today's jobs did not exist 10 years ago. *App Developer* became a job after the introduction of the first smartphones in 2007. Currently over 5.7 million apps are available in different app stores (Statistita, 2016). The growth of social media applications and users has led to the role of *Social Media Manager*. Uber was founded in 2009 and now we have people who have the profession of *Uber Drivers*. Google is investing a lot in autonomous cars and they are recruiting *Driverless Car Engineers*. Since 2000, cloud computing has come into existence. Today, *Cloud Computing Specialist* is a fast growing profession. Examples of other new roles include: *Big Data Analyst/Specialist*; *Sustainability Manager*; *YouTube Content Creator*; *Drone Instructor and Operators*; *Millenium Generation Expert*; *Digital Marketing Specialist*; *Search Engine Optimizer*; *User Experience Specialist*; *3D Designer*; *Offshore Windfarm Engineer*; *Web Analyst*; *Green Deal Assessor*; *Mobile Service Technician*; and *Robot Coordinator*, among others.

Over the next decade a number of new jobs will emerge. Futurists have developed a list with new jobs that will emerge by 2025 including (Fast Company 2016): *Virtual Reality Experience Designer*; *Professional Triber (freelance professional manager who specializes in putting teams together for very specific projects)*; *Urban Farmer*; *End of Life Planner*; *Remote Health Care Specialist*; and *Smart-Home Handy Person*, among others.

The accelerating growth of new professions related to and driven by the introduction of new technologies has enormous implications for learning

# THE INCONVENIENT TRUTH ABOUT LIFELONG LEARNING

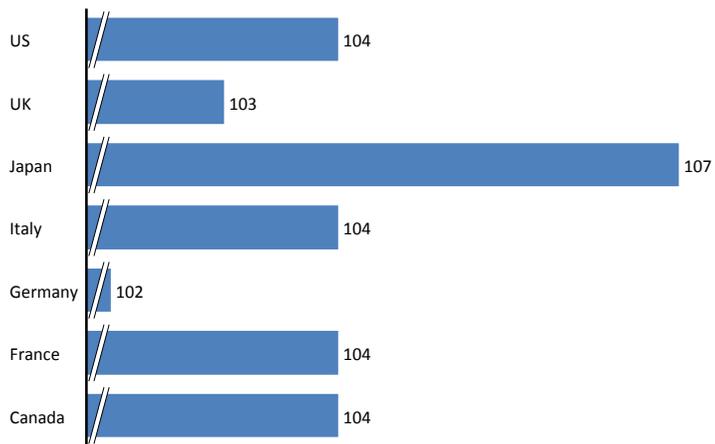
*Das Leben bildet und das bildende Leben ist  
nicht Sache des Worts, es ist die Sache der Tat,  
es ist Tatsache.*

Johann Heinrich Pestalozzi

Lifelong learning can be defined as: *lifelong, voluntary and self-motivated pursuit of knowledge for personal or professional reasons*. The overall aim of learning is to improve knowledge, skills and competencies.<sup>20</sup>

One motivator for a need to keep learning are the changes in pension policies around the world caused by a continuing growth in life expectancy. Existing data suggests that since 1840 there has been an increase in life expectancy of three months for every year.<sup>21</sup>

**FIGURE 16: OLDEST AGE AT WHICH 50% OF BABIES BORN IN 2007 ARE PREDICTED TO STILL BE ALIVE**



Source: Gratton, 2016.

My 19 year old son Yannick, who was born in 1997, has a 50 percent probability of reaching the age of 100 or 101. The factors behind the increase of life expectancy are: better health; earlier diagnoses; better nutrition; better medical care; better education; and tackling the diseases of old age.

Living 100 years will provide some interesting financial challenges. If you want to retire on 50% of your latest income and annually save 10% of your

income for that retirement, you will retire in your 80s. A growing number of countries have postponed full retirement to 67 years and it is expected that this will continue to climb. Based on existing Dutch retirement policies – Yannick will be eligible for Dutch Government retirement (AOW) at age 71 and 6 months. I expect that this number will go up another couple of years. In other words – he is likely going to be in the workforce for 45+ years.

In the past, people who grew up in more stable labour markets, paired with the relatively long life span of companies – could easily use the skills that they built in their early 20s throughout their career. The existing and future labour markets will force people to make essential time and financial investments in reskilling and upskilling at the risk of becoming obsolete.

The Dutch Government has aspirations for its workforce to work longer and experience lifelong learning but this doesn't match the realities of today. According to a report *Towards a Learning Economy*, from the The Scientific Council for Government Policy (2013 WRR), the Netherlands pays little attention to post-initial education and gets poor grades when it comes to lifelong learning.<sup>22</sup> Only 16% of people in the Dutch workforce participate in learning programs outside their daily work.<sup>23</sup>

The World Economic Forum concludes in their 2016 Human Capital Report that the Dutch workforce is not *sufficiently* prepared for the future.<sup>24</sup>

In this report, 130 countries are ranked on the level of *education & skills* and on the *employment available to people* in five distinct age groups. The Netherlands retained its 8<sup>th</sup> position on this index in 2016 although it dropped 4 places in 2015. Of particular concern is the low participation in work (80%) and high unemployment of the 55+ age group.<sup>25</sup> The top 3 countries on this list include Finland (1), Norway (2), and Switzerland (3).

The Netherlands scores a little bit better than the OESO-average with regards to investment levels in education but received a bad score on lifelong learning, according to Professor P. van Lieshout.<sup>26</sup>

## LEARNING & DEVELOPMENT

Sustainable employability through L&D is more important than ever. However, existing facts indicate that 80% of employees in the Netherlands have not completed a course of study or earned a certificate over the last 3 years. This number looks even worse for the most vulnerable categories of people including 86% of those who are unemployed, 88% of people with low education levels, and 86% of people who are age 50+.<sup>27</sup> Unfortunately, this is trending downwards. The number of people over age 30 who participate in a course of study has declined significantly since 2011.

### NUMBER OF PEOPLE AGE 30 PLUS WHO STUDY IN THE NETHERLANDS

EDUCATION LEVEL	2011	2015	DECLINE
MBO	54.000	24.000	30.000
HBO	7.400	5521	1.879
University (Excluding Open University)	14.6000	11.700	2.900
<b>Total</b>	<b>76.000</b>	<b>41.221</b>	<b>34.779</b>

Source: PWGids, 2016.

People who enroll in a course are primarily (68%) motivated to do this to obtain new knowledge and/or develop new skills which are valuable for their *existing* job, versus pursuing this to position themselves for a future role. Recent research shows that the number of undereducated employees who participate in learning & development programs has declined from 48%

in 2004 to 37% in 2014.<sup>28</sup> This indicates that lifelong learning to enhance employability is still not a priority for employees and employers.

Beyond external formal learning programs, people can participate in company-specific L&D programs. The average investment per person ranges from €500 - €1500 depending on industry, role and tenure (Berenschot, 2015). Many organizations are underspending on L&D. For example, the 2014 average L&D budget per person was €1,083 but companies only spent € 887.<sup>29</sup> This budget provides employees with an estimate of 15-30 learning hours which might be sufficient (for some job categories) to stay in compliance with existing job requirements and contribute to individual productivity. Though, it will not upskill people for a potential future role and/or a role outside their industry. Furthermore, many companies do not offer personalized L&D paths or journeys for their people but just “one-off courses” that don’t support longer-term development goals.<sup>30</sup>

Since 2008, we have seen significant shifts in employment by sector and this will continue over the next 5 years.

**FIGURE 17: AVERAGE GROWTH OF NUMBER OF JOBS PER YEAR IN THE NETHERLANDS: 2016 – 2021 ( X 1,000)**

Sector	2016	2017	2018-2021
Employment agencies	46	40	18
(Health) care and welfare	5	-2	11
Wholesale	9	9	9
Retail	6	7	8
Construction industry	9	7	7
Specialized business services	6	6	6
Food and Beverage	7	6	4
Information and communication	5	5	4
Transport and storage	5	3	3
Cleaning business and gardeners	1	2	2
Rental and other business services	1	1	1
Public administration	4	-1	0
Rental and commercial property	0	0	0
Agriculture, forestry and fishing	-1	-1	-1
Other services	-1	-1	-1
Culture, sports and recreation	-1	-1	-1
Education	1	-2	-2
Financial Services	-6	-4	-3
Industry	-1	-3	-3
<b>Total</b>	<b>93</b>	<b>69</b>	<b>59</b>

Source: SCP, 2016.

A number of industries have experienced a significant decline (e.g. Financial Services: 23,000) while other industries see an increase in employment (e.g. Health care and Welfare 22,000). One of the challenges is to prepare people who are working in declining sectors for different roles in other sectors. In the Netherlands, Education & Training Funds (O&O-fondsen) are largely (85%) sector-specific and these funds can not be used to skill people for jobs in another sector. Furthermore, these funds are underused as well.<sup>31</sup>

The European Union has developed an indicator for measuring lifelong learning: “The percentage of the population aged 25 to 64 participating in education and training.”

This may include all work-related courses or workshops, but also includes studies of variations in time commitment and effort. The best performing European Countries in 2014 were: 1. Denmark (32%); 2. Sweden (28%); and 3. Finland (25%). The fact that Denmark allocates funding for two weeks certified skill training a year for adults and emphasizes in-work training, explains its top ranking and very high degree of employment mobility.<sup>32</sup> The lifelong learning score for the Netherlands was 18%.<sup>33</sup>

What are some of the reasons that lifelong learning has not been embraced by employees or employers in the Netherlands?

Employers are using *on-demand flex talent* more and more and therefore they don't have to develop the competencies in-house.<sup>34</sup> There are also limited fiscal incentives to increase investments in people development. Furthermore, the effectiveness of some learning & development interventions on (short-term) business impact has been questioned.

On the other hand, employees are still not conscious that a start qualification (MBO/HBO/University) is not an end qualification but a beginning. Research (Nauta, 2016) suggests that employees are just not motivated to take advantage of education and training programs. Many people start to think about their development only at the moment when their job has become obsolete.<sup>35</sup> Also, many people don't make a personal investment in time and/or money for learning, as they see this as the responsibility of the employer.

Finally, employees are not necessarily satisfied with the quality and impact of different learning solutions that are available inside and/or outside the organization because they can not apply the newly acquired knowledge and developed skills in their current or future job.



# A CALL TO ACTION: LEARN or LOSE

*Nothing in this world is more dangerous than  
sincere ignorance and conscientious stupidity.*

Martin Luther King Jr.

The *perfect storm* for changing our attitude and increasing investments in lifelong learning includes the fast emergence of disruptive technologies, threatening jobs that can be replaced by robotization, digitization and automation, shifts in demand for new skilled jobs in various industries, ongoing outsourcing, the need to develop new skills at the speed of business, combined with the current underspending and underutilization of learning budgets, as well as people's limited awareness of the importance of learning.

Organizations around the world are experiencing sweeping, rapid changes in what they do, how they do it, and even why they do it. Mastering current and future realities requires deep learning capabilities. The people who will thrive and flourish in the 21<sup>st</sup> century are those who embrace new learning and are motivated to acquire new skills and competencies. But, as much as it is the responsibility of the individual, organizations have a crucial role to play in upskilling their people and nurturing new leaders. It may not be a simple task but people development is critical for organizations in order to stay at the cutting edge of their industry.

**A call to action for companies to embrace '*Lifelong Learning Strategies*' and for individuals to '*Become Lifelong Learners.*'**

## **COMPANIES: EMBRACE LIFELONG LEARNING STRATEGIES**

I have identified two different strategic initiatives to support this:

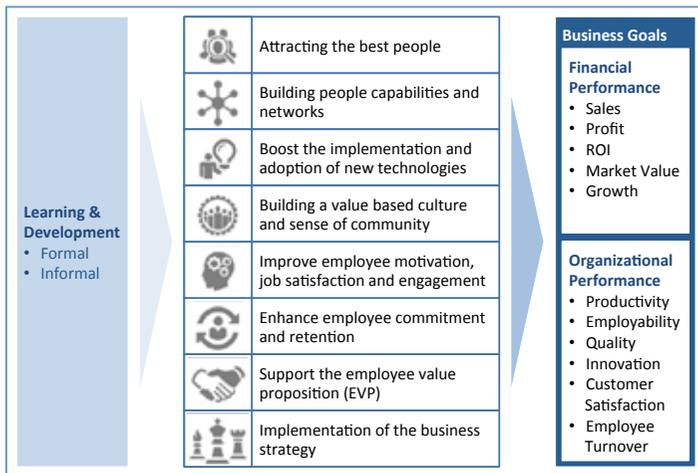
- A. Enhance the strategic role of L&D
- B. Implement 21<sup>st</sup> century L&D practices

### **A. ENHANCE THE STRATEGIC ROLE OF L&D**

The role of L&D has become more important in many organizations as shareholders look increasingly at the role of intangible assets when they establish the value of knowledge-based organizations. For example, according to Forrester Research more than 85% of the market value of a

typical Standard & Poor (S&P) 500 company today is the result of intangible assets. The bulk of these intangible assets are their people – the human capital.<sup>36</sup> Investments in L&D will pay off. For example, the value of investing in leadership capabilities has been questioned. However, research<sup>37</sup> indicates that organizations earn a substantial premium for great leadership – those performing in the top quartile on leadership outperform others by nearly 2 times on EBITDA. (Abbreviation for a company’s earnings before interest, taxes, depreciation, and amortization). Organizations that invest in developing leaders during significant transformations are 2.4 times more likely to hit their performance targets.<sup>38</sup>

**FIGURE 18: THE STRATEGIC ROLE OF LEARNING & DEVELOPMENT**



Source: van Dam, 2008.

Companies are making investments in L&D for a variety of reasons. First, people chose organizations who will help them to continue grow and develop because market valuable competencies have become the new *currency*. As there is a shortage of talent in different competency domains L&D contributes to the attraction and retention of people. It also supports

the so called employee value proposition (EVP) which helps the enterprise to become an employer of choice.

Second, the emergence of digital technologies, innovation, the brief shelf life of knowledge, new business models, globalization, an aging workforce, new legislation, and a changing workforce, to name a few, are having a tremendous impact on the need to develop people capabilities at the speed of business. Human capital is a critical production factor that requires ongoing investments in L&D in order to retain its value. The value of human capital can be determined based on the formula:

*The value of human capital:  $\Sigma$  education + accumulated work experience.<sup>39</sup>*

The value of human capital increases after completion of formal education and when people start accumulating work experience. The value declines because knowledge is quickly outdated or forgotten and needs to be supplemented by new learning and relevant work experiences. According to research from the Dutch SCP<sup>40</sup>, about 18% of employees are insufficiently equipped for the requirements of their existing job.

Third, L&D can contribute to an increase of people's motivation, job satisfaction and engagement.<sup>41</sup> It is also becoming widely recognized that the most important way to engage employees is to provide them with opportunities to learn and develop new competencies. Research has shown that highly motivated and engaged employees are invaluable in boosting the implementation of new technologies and other innovation practices.<sup>42</sup> Furthermore, engaged employees are more likely to stay with the organization where they are being challenged and given the skills to grow and develop in their chosen career path.<sup>43</sup>

Fourth, as the workforce in many companies becomes increasingly virtual and globally dispersed, L&D can help to build a value-based culture and

a sense of community. It is suggested that particularly millennials seek to work in a value-based and sustainable enterprise that contributes to the welfare of society. They also want respect for their individual talents and open communication with their management. They value their personal life in addition to enjoying a challenging work environment.

Finally and importantly, companies are using learning programs to support the implementation of the business strategy.<sup>44</sup>

The classical vision of learning is that is solely focused on improving *productivity*. Today, learning contributes as well to *employability*.<sup>45</sup> People are employable if they can easily find a job inside or outside their organization.

An extensive study of literature provided evidence that highly skilled people have a positive impact on financial and organizational performance of an organization.<sup>46</sup> For example they can increase customer satisfaction, profit, market growth, productivity and innovation.

Corporations such as General Motors and General Electric began offering in-house-training programs about 100 years ago. Today, thousands of organizations around the world have established so called *Corporate Academies*, also referred to as *Corporate Universities*, which can be defined as: “A dedicated unit or initiative that aims to develop and sustain institutional and individual capabilities to deliver performance in line with the organization’s strategy.”<sup>47</sup>

Examples of companies that have established Corporate Academies include: Apple; Disney; Danone; Nike; Deloitte; McDonalds, McKinsey & Co and Vanguard, among others. The Corporate Academies/Universities play a strong role in developing a learning culture.

Various research studies confirm that people capability development remains a high priority for many organizations around the world.<sup>48</sup> Globally, more than 8 in 10 executives view learning as an important or very important issue.<sup>49</sup> Senior executives report that their companies are not developing skills fast enough or leaders deep enough.<sup>50</sup> Therefore it is not a surprise that more than 60% of companies plan to increase their L&D spending, and more than 66% of organizations will increase the number of formal learning hours.<sup>51</sup>

However, many organizations are not satisfied with the status quo of their L&D function. As a consequence, they expect L&D to change significantly over the next three years. The L&D function needs different capabilities and has to operate more agile and nimble in order to match the faster pace of business.<sup>52</sup> The most important areas for enhancement include: aligning learning priorities with the business; assessing the capability gaps of employees; enhancing the effectiveness of the current learning initiatives; deployment of more digital learning solutions and platforms; improving the impact insights from learning programs; innovating the design of learning solutions; offering blended learning; integrating *work and learning*; and professionalization of L&D.<sup>53</sup> Companies that are taking the modernization of their skill-building efforts seriously, must attract people with deep experience in this function.

### **A learning for all culture**

As mentioned before, learning opportunities are unequally distributed in many organizations. Employees who take the most advantage of learning, are relatively young people with the highest education levels, who are typically identified by the organization as highly talented, high performers. Groups with less participation are less educated and people who are older.

There is a strong bias in organizations that “*you simply can’t teach old dogs new tricks*”. The American Psychologist Edward L. Thorndike (1874-1949)

claimed in 1927 that the ability to learn declined very slowly and slightly at about 1% per year after age 25.<sup>54</sup> It was believed that there was only a small critical window for people to learn.

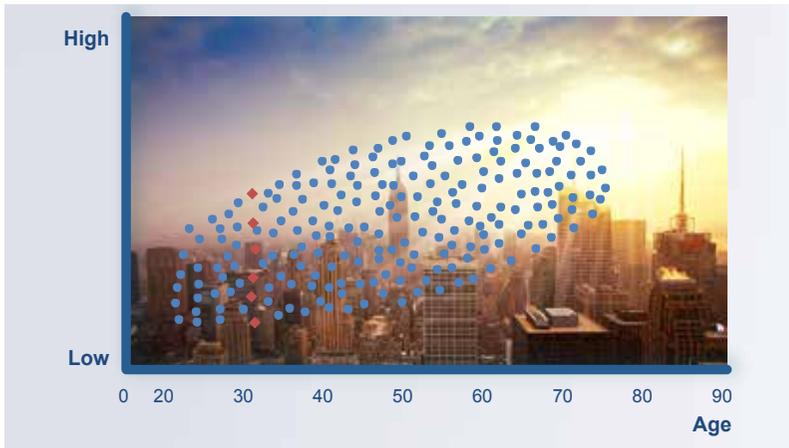
FIGURE 19: AGE AND MENTAL COMPLEXITY: THE VIEW IN 1927



Source: Crawford, 2004.

Research from scientists over the last 40 years has proven that the assumptions previously made about human growth and mental abilities are not true. The graph showing age and mental complexity reveals very different results on the basis of longitudinal research. (Kegan & Lahey, 2016)

FIGURE 20: AGE AND MENTAL COMPLEXITY TODAY



Source: Kegan & Lahey, 2016.

Each of the dots represents people in the research.

There are two important *take aways* from this graph:<sup>55</sup>

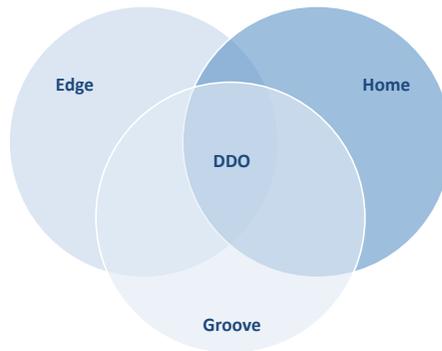
1. There is an upward slope which shows that mental complexity tends to increase with age through adulthood, at least until old age.
2. There is a considerable variation within any age group. For example, each of the people in their thirties (darker dots) could be at a different place in their level of mental complexity and some could have achieved an even higher level of mental complexity than another person in their forties.

Learning is a physical process in which new knowledge is represented by new brain cell connections. Studies report functional and structural changes in the brain related to training and experiences.<sup>56</sup> This phenomenon is described as neuroplasticity. Our brain has phenomenal capacities for adaptation throughout our life. Therefore, there is no reason not to develop people at older ages in organizations.

Harvard researchers Kegan & Lahey (2016) strongly believe that organizations that deliberately develop every single person will prosper, because this is aligned with people's strongest motive, which is to grow. This means that organizations should embrace a culture in which support of learning is woven into the fabric of working life, the company's regular operations, daily routines and conversations. In their book, *An Everyone Culture: Becoming a Deliberately Developmental Organization*, they featured three organizations (Next Jump, Bridgewater and Decurion) that share a single goal: business excellence and the growth of people into more capable versions of themselves through the work of the business.

The authors show how to build a Deliberately Developmental Organization (DDO) based on a conceptual structure of a DDO in terms of depth, breadth, and height.

FIGURE 21: THE THREE DIMENSIONS OF A DDO



Source: Kegan & Lahey, 2016.

The DDO has three dimensions and comprises twelve principles, which are referred to as *discontinuous departures*. These discontinuous departures combine to create a new *continuity*: a single continuous and immersive focus on people development for every person in the organization.

*Edge* is the developmental aspiration of the DDO and comprises four principles: 1. Adults can grow; 2. Weakness is a potential asset; error is an opportunity; 3. Run on developmental principles; and 4. The bottom line is all one thing.

*The Groove* is all about developmental practices and tools. These practices include: how meetings are structured; how employee performance is monitored and discussed; how people talk to one another about their work; the challenges they face personally; and advancing the interest of the company. The principles which are part of the *Groove* include: 1. Destabilization can be constructive; 2. Mind the gaps; 3. Set the time scale for growth, not closure; and 4. The interior life is part of what is manageable.

*Home* is the development communities. Growth can happen only through membership in workplace communities where people are deeply valued as individual human beings, constantly held accountable, and engaged in real and sustained dialogue. The principles associated with *Home* are: 1. Rank does not have its usage privileges; 2. Everyone does development; 3. Everyone needs a crew; and 4. Everyone builds the culture. According to Kegan & Lahey, *Edge*, *Home* and *Groove*, mutually reinforce each other, and together foster a *deliberately developmental culture*.

I am optimistic that the groundbreaking research from Kegan and Lahey will inspire organizations to start implementing the dimensions and principles they describe, and truly transform their enterprises into *deliberately developmental organizations*.

Another author who has stressed the importance of developing *a-learning for all* -culture is Peter Senge. He is the author of *The Fifth Discipline: The art and practice of the learning organization* and coined the concept of *the learning organization* in 1990.

It is a term given to a company that facilitates learning, continuously transforms itself and becomes a place that employees feel a commitment to. According to Senge, a learning organization exhibits five characteristics: systems thinking; personal master; mental models; a shared vision; and team learning. The concept has gained broad acceptance and a number of companies are implementing these approaches.

The execution of a strategy happens through people and is possible only if employees have the right capabilities. Many companies are striving to become true *learning organizations*, but implementation is elusive and is not often based on the research that demonstrates the characteristics of a learning culture.<sup>57</sup> Marsick and Watkins (2003) developed a questionnaire called *dimensions of the learning organization*, which can help organizations to diagnose their current status and guide change.

#### DEFINITIONS FOR CONSTRUCTS FOR THE DIMENSIONS OF THE LEARNING ORGANIZATION

DIMENSION	DEFINITION
Create continuous learning opportunities	Learning is designed into work so that people can learn on the job; opportunities are provided for ongoing education and growth
Promote inquiry and dialogue	People gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of the others; the culture is changed to support questioning, feedback and experimentation
Encourage collaboration and team learning	Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded
Create systems to capture and share learning	Both high- and low-technology systems to share learning are created and integrated with work: access is provided; systems are maintained

Empower people toward a collective vision	People are involved in setting, owning, and implementing a joint vision; responsibility is distributed close to decision-making so that people are motivated to learn toward what they are held accountable to do
Connect the organization to its environment	People see the effect of their work on the entire enterprise; people scan the environment and use information to adjust work practices; the organization is linked to its communities
Provide strategic leadership for learning	Leaders model, champion, and support learning; leadership uses learning strategically for business results
Financial performance	State of financial health and resources available for growth
Knowledge performance	Enhancements of products and services because of learning and knowledge capacity (lead indicators of intellectual capital)

Source: Marsick & Watkins, 2003.

Both Kegan and Senge argue that developing – *a learning for all* – culture will have a very positive impact on the business. Recent research by Kegan provides leaders in organizations with specifics on what they need to develop or enhance a culture of learning.

Finally, in – *a learning for all* – culture there also needs to be an ongoing dialogue about employability of the employee inside or outside the organization. Individual L&D plans need to be developed, reinforced and executed. However, people can be sent to courses or be told to take online trainings, they can not be forced *to learn*. Each individual must acquire and maintain a curious mindset, so it is important to stimulate people’s curiosity and tempt people to satisfy their curiosity with learning and discovery.<sup>58</sup>

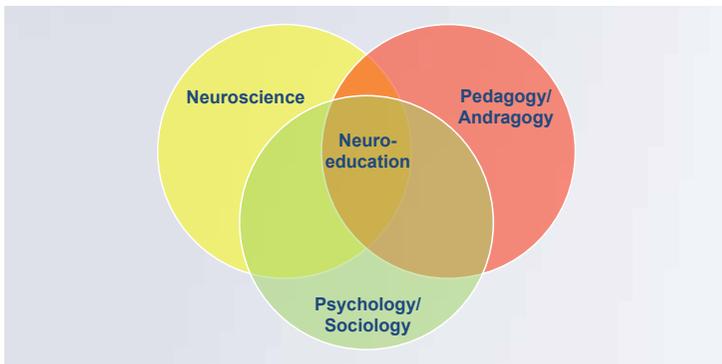
It is relevant to point out that the implementation of these approaches to creating a vibrant learning culture, requires true Learning & Development/ Human Resources Development professionals.

## **B. IMPLEMENT 21<sup>ST</sup> CENTURY L&D PRACTICES**

In this section, I will discuss a number of innovative L&D practices which support the accelerated development of people in organizations.

Historically, the field of L&D has its roots in pedagogy, andragogy, organizational sociology, and development psychology. This is the scientific study of how and why human beings develop over the course of their life. The relatively new field of cognitive neuroscience is the study of mental brainpower processes that underlie our neural systems. This includes thinking and behaviour and is driven by the learning brain. Therefore, cognitive neuroscience can reveal how the brain learns, stores, and uses the information it acquires. It is through learning that the brain enables us to adapt to our ever-changing environment.

**FIGURE 22: COMPONENTS OF NEUROEDUCATION**



Source: van Dam, 2014.

Neuroeducation<sup>59</sup> is the field that investigates basic biological processes involved in becoming literate and numerate, and explores learning to learn, cognitive control, flexibility, and motivation, as well as social and emotional experiences.

## **21<sup>ST</sup> CENTURY PRACTICE: APPLY INSIGHTS FROM COGNITIVE NEUROSCIENCE**

Learning is a physical process in which new knowledge is represented by new brain cell connections. The strength and formation of these connections are facilitated by chemicals in the brain called growth factors. We now know from neuroscience that the availability of these growth factors can be enhanced. For example, specific exercise routines, optimal sleep structure, and silencing the mind can all increase the availability of these growth factors. Nature and nurture affect the learning brain. People have different genetic predispositions but experience continuously shapes our brain structure and modifies behavior.

During the past decade numerous peer-reviewed publications have connected the fields of neuroscience with education and learning.<sup>60</sup> Several studies report structural and functional changes in the brain related to training and development experiences.

A good understanding of how the brain learns and performs is an invaluable new skill. It is essential for the future success of individual employees and their organizations.

FIGURE 23: OUR BRAIN AND LEARNING



Source: van Dam, 2016.

The following insights from brain science should be considered as part of modern L&D practices.

### 1. Prepare the brain for learning

A very important insight from neuroscience is that our brains need to be prepared for learning.

This starts with a good night of sleep which has an impact on learning and memorization.<sup>61</sup> People who are sleep deprived will be 19% less efficient at recalling memories and memory ability drops to 50% for people who have not slept at all.<sup>62</sup> The final two hours of sleep are invaluable for memories to become stable residents in our brain.

Our brain does not function well without proper *food and water*.<sup>63</sup> Our brain uses 25-30% of our energy and therefore it is critical to have a balanced diet otherwise our brain can't work an efficient way. A good diet includes complex carbohydrates (e.g. oatmeal, brown rice, vegetables, fruit and whole grains) and proteins (e.g. fish, eggs, chicken).

Simple carbohydrates (e.g. sodas, cookies, honey, white bread, pasta) have a negative impact on learning because they destabilize the blood glucose level. A great deal of water is needed for the brain's production of hormones and neurotransmitters which play a key role in the brain's communication system. Therefore it is critical that people have a good breakfast before they start a day of learning.

According to several researchers<sup>64</sup> – our learning capabilities are heavily supported by regular and adequate *exercise*. Exercise produces a protein called brain-derived neurotrophic factor (BDNF) that serves as a fertilizer for brain cells, keeping them functioning, growing, as well as supporting the growth of new neurons.<sup>65</sup> This makes learning easier. Exercise also increases the production of serotonin, dopamine and norepinephrine which help the brain to be alert and motivated to learn.<sup>66</sup>

Focused attention is fundamental in order to acquire knowledge. **Meditation boosts the alpha brainwaves which are important for focusing attention, studying and memorizing. Meditation has proven to be powerful in improving all mental tasks including promoting a general readiness to learn.**<sup>67 68</sup> This is one of the reasons that companies such as Google, Facebook, eBay, and McKinsey, etc. are offering their employees opportunities to benefit from meditation classes at work.

Stressful events interfere with people's ability to learn. Research<sup>69</sup> suggests that acute stress activates selective corticotrophin-releasing hormones which disrupt the process by which the brain collects and stores memories. **The best medicine against stress is exercise.**

## 2. The capacity of our brain

Many people, particularly the millennials - suggest that they *multitask* but in reality they are very good at jumping from one task to another which is referred to as *switch-tasking*.

Unfortunately, people's brains are not wired for multi-tasking because our brain needs to stop working on one task before it can work on another task. Research shows<sup>70</sup> that individuals who frequently shift tasks make 50% more errors and spend at least 50% more time on both tasks. **Our brain needs fully focused attention for learning.**

Learning activates different parts of our brain's existing network and will make changes to it.<sup>71</sup> Therefore, *previous knowledge and experiences* are extremely valuable to support learning. Additionally, *creative and innovative thinking processes* in our brains *are built on the foundation of knowledge*. Our brains continuously draw on this knowledge base to create simple solutions to complex problems. Knowledge provides the building blocks for innovation, which is the top priority for many organizations. For this reason alone, people wanting to be more innovative (and thereby increase the value of their contribution to the organization) should explore every opportunity to add to their knowledge base.

Plato mentioned more than 2,000 years ago that all learning has an *emotional base*. Today, we know that that our brain is better at remembering emotional content. One part of our brain (amygdala) is responsible for processing memory of emotional reactions. It boosts activities in areas of the brain that form memories as soon as it identifies an emotion.<sup>72</sup> Tapping into people's emotions during learning interventions will make it easier to form a memory of what has been learned.

### 3. The learning process

There are many insights from neuroscience which should guide the design of learning interventions. One of the key ones is that "*The one who does the work does the learning*".<sup>73</sup> **Permanent brain connections are only made when people combine a number of activities such as reading, writing, listening, talking, practicing, collaborating and reflecting.**

Powerful training initiatives use *multiple learning delivery* channels, vary the type of activity, and employ instructional methods that stimulate *active engagement* including facilitation, simulation, games, and role play.

Many studies have confirmed that people learn the best if they can use *multi-senses* including hearing, seeing, touching, smelling, and tasting. All human senses work together: learning will get a boost if at least two senses are used together.<sup>74</sup> For example students were found to have three times better recall of visual information over oral information, and six times better recall when the information was represented using both oral and visual methods at the same time rather than only oral methods.<sup>75</sup>

The brain is divided into hemispheres, called the left and right hemispheres or half's. Each hemisphere provides a different set of functions, behaviors, and controls. The right hemisphere is often called the creative side of the brain, while the left hemisphere is the logical or analytical side of the brain. Because there is no evidence that our left and right brain work very differently, it is suggested that learning techniques should not be designed on the desire to enhance the less dominant hemisphere.

The brain remembers the first part and the last part of a training initiative best. This is called the *primacy* (begin) and *recency* (end) effect.<sup>76</sup> The main reason for this is that the short term memory at the beginning of a learning session is less 'crowded'. The end of a learning session is the perfect moment for application to support our retention of what we have learned. The middle period of learning should be filled with the least important information, and shorter learning sessions will improve the middle period. This is why training sessions should be ideally last no more than 20 minutes, with planned *brain breaks* separating sessions. Overall, the usage of *short learning sessions* with small *chunks* of content will increase knowledge retention.

Permanent memories are formed after *distributed practice* (also referred to as spaced repetition) where practice is broken up into a number of short sessions over a longer period of time.

Learning is a social activity. Sharing learned content with colleagues during a learning session and at work improve retention. Deploying various learning techniques (e.g. mind mapping) supports more effective learning and memorizations.

The adult brain changes following the acquisition of new skills. However, the changes in the brain reverse when people do not have the opportunity to use the skills they have developed – *use it or lose it*. Unfortunately, many training initiatives are less effective because people can not apply their learning in the workplace after completion of training. This is one of the benefits of digital learning. It provides on-demand learning and knowledge that can be reviewed at any time and in any place needed. Finally, in order to reinforce the application of the new learning on-the-job, organizations should follow up the learning with specific interventions such as coaching.

There are clear and accurate summaries of progress in the field of the cognitive neuroscience of learning. However, there are at the same time questionable media reports and claims about brain-based learning that, according to some scientists, often oversimplify, misrepresent which have been referred to as *neuromyths*.

Example of neuromyths:<sup>77</sup>

- You only use 10% of the capacity of your brain
- You are either a left or right brainer
- Individuals learn better when they receive information in their preferred learning style (for example, visual, auditory, or kinesthetic (= learning that takes place by carrying out physical activities))

- Differences in hemispheric dominance (left brain or right brain) can help to explain individual differences amongst learners
- An age-based limited time window exists for learning.

Therefore L&D professionals should use only research that provides sufficient evidence and that can be put into practice. I believe that it is important that L&D professionals have a fundamental knowledge of the working brain and apply cognitive neuroscience evidence to their practice of developing people.

#### **4. Our brain and strengths**

Historically, corporate people development practices have been focused on performance deficiencies or weaknesses. Weaknesses are behaviours you are not good at, and which also drain your energy.

Over the last decade a growing number of companies have moved toward focusing on a strengths-based development approach. The StrengthsFinder® assessment tool, which was developed by Gallup, is now used by 1.6 million employees every year and in 467 of the *Fortune* 500 companies.<sup>78</sup>

The belief of 'strengths-based development' is that people have enduring, unique strengths and when they are encouraged and aided to play to their strengths, high quality performance and full engagement result. Mitigating your weaknesses might be relevant if the weakness has gotten in the way of your overall performance, but this kind of fixing never results in becoming *excellent* in this area.

Strengths-based development has its roots in positive psychology. This is the scientific study of human flourishing, and an applied approach to optimal functioning.<sup>79</sup> The term *positive psychology* was used for the first time by the humanistic psychologist Abraham Maslow who included a chapter entitled '*Toward a Positive Psychology*' in his 1954 book *Motivation and Personality*.<sup>80</sup>

Brain research has supported building on an investment in strengths. Studies have found that when a baby is born, there are approximately 100,000 billion neurons in the brain, each capable of 15,000 synapses. A synapse is a structure that permits a neuron (or nerve cell) to pass an electrical or chemical signal to another neuron.<sup>81</sup>

As the baby develops and learns over the next 3 years, there is an explosion of connections in the brain which, for reasons not fully yet understood, stops at about the age of three.<sup>82</sup> Then, a pruning work starts in the brain. The synapse connections that are used frequently become stronger, like frequently traveled roadways, and unused connections disappear like a remote path in a jungle.<sup>83</sup>

By the time we reach our 20s, these super highways in the brain are essentially developed, widened, and paved. They are our enduring talents and strengths. By continuing to build on this foundation of knowledge and skills, we develop our talents. When we use our talent-based strengths we achieve success in life and work.

Research studies have been done on the impact of strengths-focused development of leaders on their overall effectiveness. In one organization, following a leadership assessment process, a group of leaders opted to focus either on developing weaknesses or on developing their strengths. The same leadership assessment was completed 12-18 months later, and the group that focused on strengths showed three times the improvement on their leadership effectiveness.<sup>84</sup>

FIGURE 24: IMPROVEMENT OF LEADERSHIP EFFECTIVENESS SCORE FOR TWO GROUPS OF PARTICIPANTS



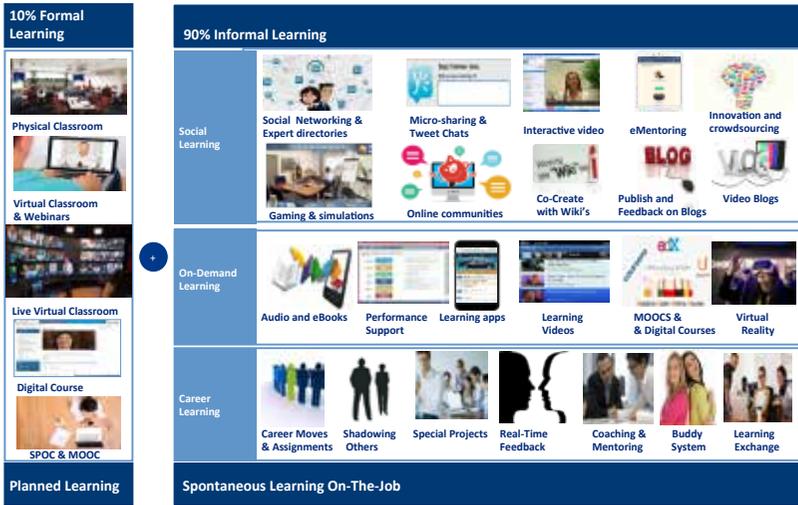
Source: Zenger & Folkman, 2012.

In conclusion – “*strengths-based development*” does not imply that people should *only focus* their improvements on *strengths*. When people take on new roles, with different demands, they might discover ‘*unrealized strengths*’ which can be developed as well. Furthermore, identified weaknesses need to be raised to an acceptable level for certain roles and/or one should explore finding other people that have strengths in these areas. Finally, one should also be careful not to overuse a specific strength in certain settings because this could become a perceived liability.<sup>85</sup>

## 21<sup>ST</sup> CENTURY LEARNING PRACTICE: DEPLOY A FULL LEARNING & DEVELOPMENT PORTFOLIO<sup>86</sup>

Now I would like to introduce a learning framework that provides a holistic perspective on how organizations can build people capabilities and design leading learning experiences with bottom line impact and relevance to a global workforce.

FIGURE 25: LEARNING SOLUTIONS FRAMEWORK



Source: van Dam, revised 2016

This learning solutions framework has been developed and validated by many L&D professionals around the world. The first version was published in my book *Next Learning, Unwrapped* (2012) and has been revised since.

This framework illustrates that personal and organizational learning does not need to be *one-size-fits-all*. Rather, it can take place through multiple blended formal and informal learning initiatives. It is suggested that about 10% of learning in organizations happens through formal L&D events and 90% of learning is informal and happens on the job.

**FORMAL LEARNING**

Formal learning is structured, curriculum-driven, role- or level-based learning that is shaped by an organization. In other words, the organization decides what kind of learning needs to be completed by people during a specific timeframe in order to develop identified competencies. Formal learning

plays a relatively limited but crucial role in building people capabilities in organizations.

Formal learning can be delivered in a classroom learning context (physical or virtual), through self-paced, digital learning programs (for example, web-based training, MOOCs or SPOCs [Massive Open Online Course and Specific Private Online Course], webinars, and learning apps), and by providing people with access to online diagnostics and assessment tools such as emotional intelligence and the Myers-Briggs Type Indicator, among others.

According to the ATD 2015 *Global State of the Industry Report*, the average number of formal learning content hours delivered per employee in 2014 was 32, and the so-called BEST *organizations* delivered 44 hours of learning per employee in 2014. In other words, organizations that take people development seriously provide more time for formal learning. One of the biggest challenges for people in today's business environment is setting aside the time needed to participate in learning. This is where I believe formal development at corporate universities and business schools continues to play a crucial role. Taking people out of the office and providing them with development time in a safe environment enables them to experiment with new ideas and concepts, practice skills in simulations. Additionally, they are encouraged to develop solutions for existing business issues, reflect on their performance and that of their team, and turn their learning into new behaviors and actions.

Conversations with L&D/HRD leaders from different companies in countries around the world have validated that many employees still value a formal, structured approach to learning. Employees want to know which competencies they need to develop and how they can do this. This also is particular true of knowledge-driven organizations like Consulting and Professional Services Firms who have made significant investments in corporate learning & leadership development centers and formal curricula.

It is important that formal learning solutions are always designed to improve the capabilities of employees and enhance the performance of the individual and organization. It has become a best practice to blend formal with informal learning solutions to achieve this goal.

**Research on formal learning in the Netherlands:<sup>87</sup>**

- An average of 42% of employed people have participated in some kind of formal learning over a two year period and this percentage has almost remained unchanged over the last decade.
- People who have little to no participation in any kind of formal learning include temporary workers (20%) and self-employed workers (37%).
- The percentage of people who participate in learning, whose job requires education (2014): A. Primary School: 24%; B. High School/MBO: 46%, and C. HBO/WO: 58%.
- People with a relatively weak position in the labour market: older people, less educated, flex workers and people with a poor health condition, participate the least in formal learning.

## **INFORMAL LEARNING**

Since people spend most of their time in the workplace, it is critical to learn on-the-job. This informal learning can be defined as semi-structured or unstructured learning. It is driven by the daily developmental needs of employees, and occurs often spontaneously on-the-job through problem solving, interaction with colleagues, and use of digital learning solutions. Informal learning has its theoretical roots in constructivism and is not prescriptive, but it is an example of self-directed learning. It is estimated that informal learning accounts for 70 % to 90 % of all the learning that takes place in organizations. There are three different categories of informal learning, as shown in the framework: 1. Career-driven learning, 2. On-demand learning, and 3. Social learning.

### 1. Career-driven learning

Most learning takes place when people move into different roles or work on new projects that challenge them to work with new teams in a different context and with different goals. As a result, people move outside their comfort zone into a new area—*the learning zone*. It is quite effective if these experiences are supported by on-the-job coaching and mentoring, and supplemented with formal classroom learning programs (for example, learning programs on managing people, leading change, and executive education modules on various topics).

### 2. On-demand learning

Every day, people are looking for the knowledge and information that help them performing better in their jobs. The Internet, search engines, electronic performance support systems, and the growth of mobile computing provides people with 24/7 access to rich content at their fingertips, enabling them to fill knowledge gaps. A major challenge for many people is information overload and the fact that it is difficult to find what is needed. As a result, people waste time searching and surfing various internal portals. Therefore, L&D functions need to design learning platforms that provide a personalized view of learning and are supported by social media features (for example, rated, recommended content – the Amazon user interface like experience) and up-to-date and relevant learning content.

### 3. Social learning

People do learn from other people in both formal and informal learning. Social learning refers to Albert Bandura's theory indicates that people learn most effectively when they interact with others about a given topic. A 2001 study from the Harvard School of Education reinforced this theory and showed that students who studied in groups were more engaged in their studies, were better prepared for class, and learned significantly more than students who worked on their own.

The term social learning has been used frequently in the context of social media and web 2.0 technologies. I have defined social learning as “*the interaction between two or more people utilizing social media and/or other collaborative technologies to facilitate exchanges in knowledge acquisition.*” Social learning is characterized by interactive collaboration and iterative knowledge creation stimulated by cycles of sharing and feedback. Examples of social learning applications include serious gaming and simulations, online communities, wikis and blogs, social networking, expert directories, micro-sharing and tweet chats, interactive video, online coaching, and crowdsourcing.

Many organizations are exploring how to improve the learning that takes place on the job and apply the so called 70:20:10 model for L&D. This model suggest that people obtain 70 percent of their learning from job-related experiences, 20 percent from interaction with others and 10 percent from formal education events. The model was created in the 1980s by Morgan McCall, Michael M. Lombardo and Robert A. Eichinger and was featured in their book *The Career Architect*.<sup>88</sup>

#### **Research on informal learning in The Netherlands<sup>89</sup>**

- 38 percent of people *learn a lot or quite a lot* by just doing their job.
- 18 percent of people learn *nothing* and 44 percent *just learn a little bit* by just doing their job.
- People learn significantly less on the job after age 35.
- Informal learning supports the development of competencies that are required in an existing role but don't prepare people for a very different role in the future.

## PROFESSIONAL LEARNING DESIGN

With the emergence of new learning approaches and learning technologies, someone might ask: *What makes a program an effective learning experience?* The results of meta-analysis of more than 355 studies<sup>90</sup> conclude that the most important factor in knowledge retention is the quality of the learning design, rather than the delivery method, whether it is classroom- or technology-based learning. Physical classroom learning and technology-based learning are both used (and blended) to support L&D, and each approach has a unique place in the portfolio of learning delivery options. Professional learning design should guide intentional choices on the use of different learning modalities, enabling the production of high-end, effective learning experiences. Four phases can be distinguished in professional learning: learning analysis, categories of learning goals, and learning delivery methods.

### Learning analysis

The first stage of a learning analysis is to assess the business requirements and determine what kind of performance capabilities the organization needs, both short-term and longer-term. This will help learning professionals to understand if a learning program is necessary, and how the business needs can be addressed other than through learning initiatives. If there is a need to develop a learning program, the content and task analysis stage will begin. The content is the knowledge component, and tasks are decomposed from skills that a person needs to master. These provide input for the second stage of the professional learning design model.

### Categories of learning goals

At this stage, L&D professionals need to identify the learning goals that support building the required people capabilities and close the performance gap that was identified. There are five categories of learning goals.

- *Knowledge and skills assessment*: Assess someone's knowledge or skills. For example, this can be done by using different (electronic) diagnostic tools, surveys, or by live assessment centers.
- *Access look-up knowledge*: Determine which knowledge a person needs to access. It is not a requirement of this learning solution that the person remembers the specific knowledge; they just need to know how where to find it if needed.
- *Acquire must-know knowledge*: Transfer knowledge that is critical for people to retain because they need to apply the knowledge on a regular basis.
- *Create and share knowledge*: Engage people in the creation of knowledge and in the sharing of this knowledge with others.
- *Skill development*: Learn a new ability or a new capability to do something well.
- *Skill practice*: Practice a skill that has been learned.

Learning goals can also be defined in terms of business outcomes, which are verifiable outcomes of relevance to the business of the organization. Outcome-driven learning goals have gained significantly in relevance and value over recent years.

### **Learning delivery methods**

At this stage, one or more learning modalities must be selected for design and development. The most important criteria for selection are learning effectiveness and learning efficiency.

Learning effectiveness determines which learning modalities provide the best way to transfer knowledge and build skills based on the business requirements. For example: *What is the timeframe allotted to achieve competence?* The identified learning goals have a significant impact on choosing the best learning modality.

Learning efficiency determines which learning modality provides the best value for the investments made.

Depending on the number of people who need to be trained, technology-based learning solutions typically provide learning at lower costs compared to physical classroom learning programs.

### **Learning modalities can be grouped into four categories**

- *Online performance support*: Technology-based learning systems that offer help to increase productivity and efficiency. One use case of online performance support systems is to support access to *look-up knowledge*.
- *Collaborative or social learning*: This is a situation where two or more people learn together. This can happen through enabling asynchronous collaborative and social technologies, or by having live interactions.
- *Digital Courses*: These are synchronous- or asynchronous-designed technology-based learning programs that support specific learning goals.
- *Physical classroom learning*: The physical classroom is an important environment for L&D, with the biggest value derived by reinforcing the company culture; providing access to leadership; building teams; exchanging knowledge and best practices across different organizations, functions, departments, industries, or geographies; networking; and practicing new skills. Another benefit of physical classroom learning is that people have dedicated time to focus on learning at a facility with limited disruptions from work.

After the selection of the learning modalities, the next step is to apply instructional design theories, pedagogical concepts, and instructional methods, and to identify the right media to develop world-class learning solutions.

### **Designing blended learning**

The outcome of the process described above creates learning experiences that could be a mix of different technology-based learning modalities or a mix of digital learning modalities and a physical classroom experience.

Blended learning is the mix of learning strategies, methods, media, and delivery modalities that support the learning objectives and maximize the efficiency and effectiveness of the learning. Finally, the magic is in the blend. Learning design excellence requires a deliberate and explicit choice of the right modality for the level of learning required.

## **DIGITAL LEARNING**

In 1997, almost 20 years ago, the term *e-learning* was coined. ATD reports that in 2014, 41% of all formal learning in organizations globally was delivered through technology supported methods. As discussed, today there are multiple technology-based learning solutions which are often referred to as *digital learning*. However, a new development is that the content of digital learning and digital learning platforms are moving to the *cloud*, becoming accessible across multiple devices and teaching environments and are often being generated, shared and continually updated by learners themselves.<sup>91</sup> The power of digital learning is that it can be taken on-demand, at any place, and on multiple devices providing a personalized experience that is very cost effective. And yet the quality of the instructional design can differ significantly, having either a very positive or negative impact on the learning experience and therefore the effectiveness of learning.

### **Massive Open Online Courses (MOOCs)**

MOOCs are a relatively new digital learning solution. MOOCs are offered by Udacity, Coursera and edX (a nonprofit founded in 2012 by Harvard and MIT) who partner with faculty and universities around the world to offer online courses for free (or at relatively low costs). Courses are offered on almost any university subject including: business and management, economics, finance, computer science, chemistry, medical, etc. Participants gain a certificate of completion which can be valuable for job or career enhancement. A number of courses provide academic credits that are accepted by selected universities.

The opportunity to learn from the best educators of the top universities at no cost has captured the imagination of millions who have registered for MOOCs across the United States and abroad. Between 2012 and 2015, over 25 million people have enrolled in MOOCs from Coursera, Edx, and Udacity, but only 3.9 million completed a MOOC from the providers mentioned.<sup>92</sup> Critics suggest that the low completion rates are a major cause of concern regarding the long-term success, impact and sustainability of MOOCs and raise questions about the pedagogy of MOOCs.<sup>93</sup> Others argue that the reach and impact is still very significant (Zhenghao, et. all, 2015). The primary goal of 52 % of those who complete a MOOC, is to improve their current job skills or to find a new job. 87 % of this group reports a career benefit of some kind. 28% of people who complete a MOOC enroll primarily to achieve an academic goal. Of these, 88 % report an educational benefit.

A growing number of corporations such as Google, AT&T, Accenture, GE, Boeing, etc, are collaborating with MOOC providers to offer specific private online courses (SPOCs) in skills areas where they experience a talent shortage. For example, Microsoft is partnering with edX to offer its Professional Degree program, beginning with a curriculum on *data science*.<sup>94</sup> In 2015, IBM estimated that the global need for data scientists is 4.4 million jobs, but only one third of those positions will be filled.<sup>95</sup>

I believe that MOOCs and SPOCs will provide corporations and the workforce of tomorrow with a powerful opportunity to turn education into a lifelong experience at limited cost. This learning modality will also help people by refreshing their knowledge while they interact and learn from world class faculty, develop cross-cultural perspectives and acquire expertise from their peers. Organizations of the future will be driven by connectivity, collaboration, and networks. A MOOC can be a perfect incubator for these capabilities. MOOCs are designed and build to stimulate collaboration and support people to develop a deep level of knowledge and expertise.

## INDIVIDUALS: BECOME A LIFELONG LEARNER

As discussed in the previous section, organizations should enhance L&D capabilities, allocate more funding and time to learning, as well as create *a learning for all* culture where people are encouraged and inspired to continue reskilling and upskilling themselves.

Studies show that people who maintain their ability to learn, outpace others professionally. When people are learning they feel the effects of dopamine (which is a neurotransmitter) in their brain which give them a good feeling and makes them want to engage in more of these learning experiences. It is noticed that people flourish when they learn and connect with other people.

Lifelong learning starts and ends with the individual. In the following section I will introduce and discuss six distinctive mindsets and practices which support people in becoming lifelong learners.

**FIGURE 26: MINDSETS FOR LIFELONG LEARNERS**



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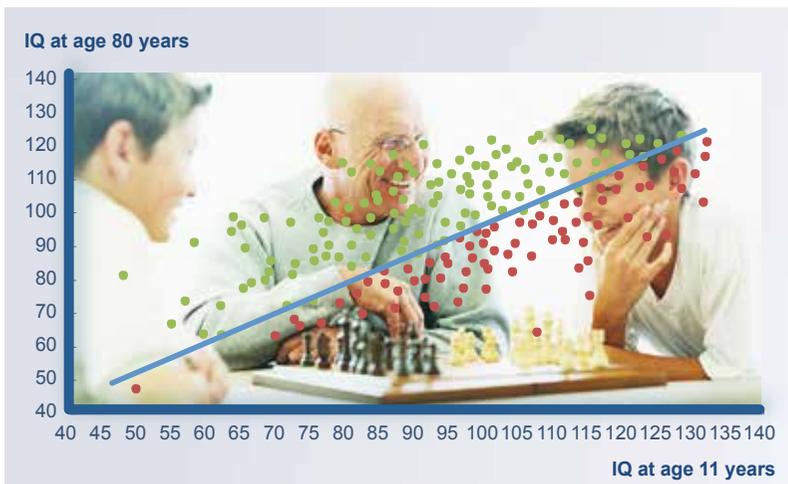
Source: van Dam, 2016.

### 1. Focus on growth

Learning starts and ends with the individual, and this takes me to an important question: *Is intelligence static and fixed at birth or can it be developed?* One way to answer this question is to compare people's Intelligence Quotients (IQ) test scores over a longer period of time.

An illustration of this is a research study which started in 1932.<sup>96</sup> The entire population of Scottish 11-year olds (87,498) children took an IQ test which was repeated over 60 years later and included 500 people of the original population.

FIGURE 27: IQ TEST SCOTTISH PEOPLE AT AGE 11 AND 80



Source: Deary, Whalley, Mackintosh et al., 2011.

The vertical line in the visual shows the perfect positive (1.0) correlation between IQ scores at age of 11 compared with IQ scores at 80. The results show a high (0.66), but not a perfect, positive correlation. All people who are plotted above the line have increased their IQ during their lifetime, versus the people plotted below the line who have experienced a decline in their IQ test scores.

There are many possible reasons for this, including health-related reasons like dementia. However on average, individual scores at age 80 are much higher than scores at age 11.

In 2008, researchers asked the 10 best chess players in the world to take an IQ test. They discovered that 3 out of 10 had a below-average IQ. Since playing chess at the top level in the world is undoubtedly commonly associated with highest levels of IQ – they wondered how this was possible. They learned that those people had played between 10.000 and 50.000 hours of chess. Many studies<sup>97</sup> have confirmed that it is not necessarily intelligence that makes people experts but it is all about effort and practice (= hard work). The most successful people devote the most hours to deliberate practice, practice that focuses on tasks beyond one's current level of competence and comfort. This means continually observing results of your practice and making appropriate adjustments, and doing that for hours every day.<sup>98</sup>

In summary, many studies have confirmed that intelligence can definitely be developed and that there are *no limitations* in what people can learn throughout their lives. According to the psychologist Jesper Mogensen<sup>99</sup>, “*our brain is like a muscle that gets stronger with use and that learning prompts neurons in the brain to grow new connections.*”

Over the last 30 years, Carol Dweck<sup>100</sup>, a psychologist from Stanford University, has studied learners intensively. She concluded that people's mindset about learning will have a significant impact on how much they will learn. Dweck has defined a mindset as: “*how people view their own intelligence and abilities to learn.*” This view will affect the effort put forward, the risk taken, how failures and criticism are perceived and willingness to accept and learn from these.

Dweck differentiates mindsets into *fixed mindsets* and *growth mindsets*.

People with fixed mindsets believe that their potential is fixed based on their genes or heritage, socio-economic background, or opportunities available to them. Those people tell themselves and others, e.g.: *“I can’t do public speaking so I should avoid it”* or *“I am not a good learner and therefore I should not take courses offered by my company.”*

People with a growth mindset believe that their true potential is unknown because it is impossible to foresee what can happen over the years as a result of passion, effort and practice. They love challenges because they see this as an opportunity for tremendous personal growth.

## TWO MINDSETS

CHARACTERISTIC/ BELIEF	FIXED MINDSET	GROWTH MINDSET
<b>Self- Image</b>	Believe that intelligence is static. In their view you are smart or not and there is nothing you can or should do about this.	Intelligence can be developed. Don’t see their self-image tied to their abilities. They want to learn and accept failure is part of learning.
<b>Challenges</b>	Avoid challenges because the potential to failure presents a risk to their self-image.	Embrace challenges because they believe they will emerge stronger and discover valuable things by engaging in a challenging effort.
<b>Obstacles</b>	Give up or get defensive. Try to avoid obstacles.	Persist in the face of setbacks: An obstacle is just one more of many things on the road toward learning and improving.

<b>Effort</b>	See effort as unpleasant and unrewarding.	See effort as a way to mastery. It is viewed as the natural path of the learning process.
<b>Criticism</b>	View criticism of their abilities as criticism of themselves as individuals. This leads to less chance of improvement because they are not open to use any of the feedback that could help them to improve.	They don't take criticism personally but believe that it is meant to help them grow and develop. They also see criticism as directed at their current level of abilities, which they know will change.
<b>Success of others</b>	See other's success as making them look bad. Feel threatened by success of others.	Is seen as inspiration and something to learn from.

As a result – people with a fixed mindset may plateau early and achieve less of their full potential, whereas people with a growth mindset reach even higher levels of achievement.

Dweck suggests that minds are context specific. For example a person can have a growth mindset in one area and a fixed mindset in another area. Nearly everyone has at least one fixed mindset but there is a lot one can do about this, including:<sup>101</sup>

Become aware of fixed mindsets and understand what has triggered this.

- Learn to hear and reject the fixed mindset voice.
- Recognize that there is a choice.
- Refocus with a growth mindset voice
- Take growth mindset actions.

In conclusion, in order to become lifelong learners - people need to focus on a growth mindset.

## 2. Become a serial master

Many forces are currently having an impact on employability including: digitization; automation; robotization; globalization; demographic changes; legislation; changing relationship between employer and employee; competitive forces; climate changes; complexity of work; etc., which makes it challenging to predict the future of work.

Although a number of trends in workforce can be identified. For example, about one-third of all U.S. workers are freelancers or contractors (50,656,000) compared with one fifth of workers (1 million) in the Netherlands (CBS, 2016). A 2016 McKinsey research report<sup>102</sup> concluded that 20-30 percent of the working age population in Europe and the US engage in some kind of independent work. US employers indicate that they plan to increase the number of contingent or part-time workers.<sup>103</sup> Sociologist Richard Greenwald estimates that up to half of all workers in the US may become freelancers in the next decade.

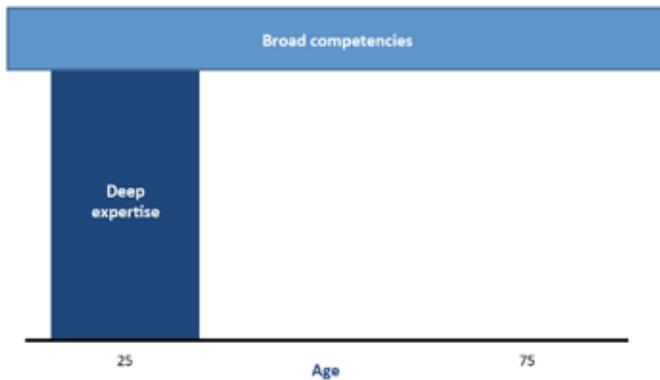
In the 19<sup>th</sup> century, work was done by craftsman from home and by people in agriculture. Workers (skilled and unskilled) moved to factories at the end of the 19<sup>th</sup> and early 20<sup>th</sup> century to work on assembly lines. The work was broken down in smaller tasks and could be done with an unskilled workforce. Over the last 80 years organizations have employed more and more non-specialist managers who understood the culture; how decisions were made; and had unique insights on how their company functioned. Their skills and competencies were unique to the organization and this worked well because they were rewarded with a lifetime of employment.

In her book *The Shift*, London Business School professor Lynda Gratton argues that the age of the *shallow generalist*, who knows a little about lots of different topics, is over. Being a *jack of all trades and master of none* means jack (little or nothing) in a world of Wikipedia with instant accessible information at our fingertips. It is not a surprise that the number of managers

with *generic expertise* has declined by 15% in the Netherlands between 2014 – 2016, while the employed workforce has increased by 2.3%.<sup>104</sup>

The 21<sup>st</sup> century depends on people's ability to build intellectual capital as this will be the foundation for value. People need to master multiple domains over the lifespan of their careers and become serial masters. I suggest that a *T-profile or T-Shape*, in which people develop deep expertise in one discipline early in their career and supplement this with on-the-job development of integrative competencies, is not sustainable.

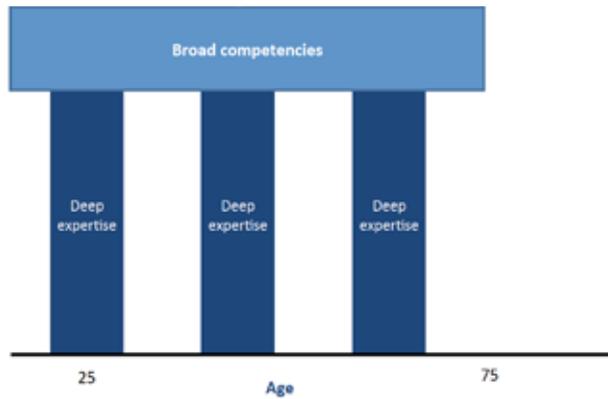
FIGURE 28: TRADITIONAL T-PROFILE KNOWLEDGE WORKER



Source: Guest, 1991.

Generations who might live over 100 years and won't retire until their late 70s or early 80s, need to develop different deep areas of expertise during their life supplemented with targeted on-the-job-development.

FIGURE 29: M-PROFILE OF THE NEW KNOWLEDGE WORKER



Source: van Dam, 2016

For example – you may start in the workforce as a journalist with a master’s degree in journalism. Later on you might specialize in financial journalism and pursue a master’s degree in Business Economics during your thirties. And you may continue to develop by taking various in-depth masterclasses on related topics, such as digitization, etc., throughout your 40s, 50s and 60s.

Achieving excellence in any field requires developing higher levels of expertise. Willyerd and Mistick<sup>105</sup> have defined five levels of expertise:

1. *Initiate*: Minimal or no exposure.
2. *Novice*: Some introductory instruction; may have taken formal courses, but little applied experience.
3. *Competent*: Actively learning and working in the field; usually has five or fewer years’ experience; in complex fields may take up to 12 years; relies on others for complex problem solving advice.
4. *Professional*: Able to work with little or no direction at a high level; recognized with awards and recognition for outstanding contribution in the field; often has assumed substantial responsibility for decision making.

5. *Expert or Master*: Highly regarded by others; can handle difficult, rare situations; skilled across subdomains; offers ground breaking solutions; rarely has less than a decade working in the field.

Relevant skills have become the currency in the workplace. It is obvious that contractors only get work due to the fact that they have deep skillsets and expertise for jobs which are in high demand. People need to develop these skillsets that create value and are noticed by others. Because these skillsets are rare, the demand for these skills exceeds supply, and it is difficult for others to develop or imitate this.<sup>106</sup>

In conclusion, the 21<sup>st</sup> Century worker must develop new expertise and become a serial master. This requires a continuous reflection and evaluation of personal skills due to the fact that certain skillsets have a *sell by date* and other skillsets become more valued.

### 3. Stretch

As discussed, the world is changing fast and it is mandatory to continue developing new competencies. Many researchers<sup>107</sup> have suggested that learning only takes place outside of people's so called *comfort zone*, it happens when they stretch themselves. The comfort zone can be defined as "*a behavioral space where people's activities and behaviors fit a routine and pattern that minimize stress and risk, which provide mental security and typically steady performance*".<sup>108</sup> People who stay in their comfort zone hold themselves back instead of challenging themselves to try new things and grow.

Tasks outside of people's comfort zone move people into their *learning zone*, where they acquire new knowledge, develop and practice new skills. After a while people develop a new level of proficiency, and their learning zone becomes part of their comfort zone. At this stage people can pursue developing new skills by moving into a new learning zone.

FIGURE 30: COMFORT AND LEARNING ZONE



Source: Yerkes & Dodson.

People are exposed to risk and more stress when they are executing tasks in the learning zone. Research on comfort zones from the Harvard Psychologists Robert Yerkes and John Dodson<sup>109</sup> suggest that there is a strong relationship between an increase in stress and the enhancement of performance (the *Yerkes-Dodson Law*). Initially, executing new tasks will increase (good) stress which will lead to a higher level of performance. However, an increase of stress beyond a certain level can cause anxiety (bad stress) and will have a negative impact on performance.

FIGURE 31: YERKES – DODSON LAW



Source: Yerkes & Dodson, 1908.

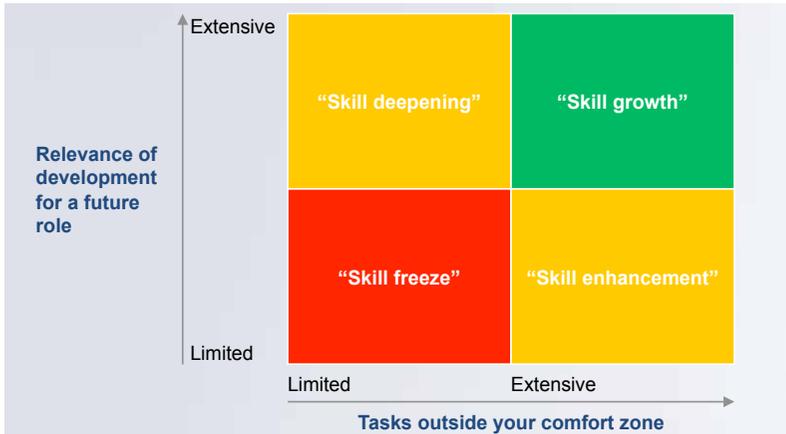
Their research shows that performance will increase with a moderate amount of stress but if stress gets too high, performance will suffer. Therefore, it is important to expand one's comfort zone with the right new tasks and at the right pace, which differs by person.

People have opportunities to *stretch* themselves while doing their work but it depends on the kind of work that they have been assigned.

New work assignments can be assessed based on two criteria<sup>10</sup>:

1. To what extent the new tasks are outside their comfort zone
2. To what extent the new tasks are relevant to one's development for a (potential) future role

FIGURE 32: ASSESSING WORK ASSIGNMENTS

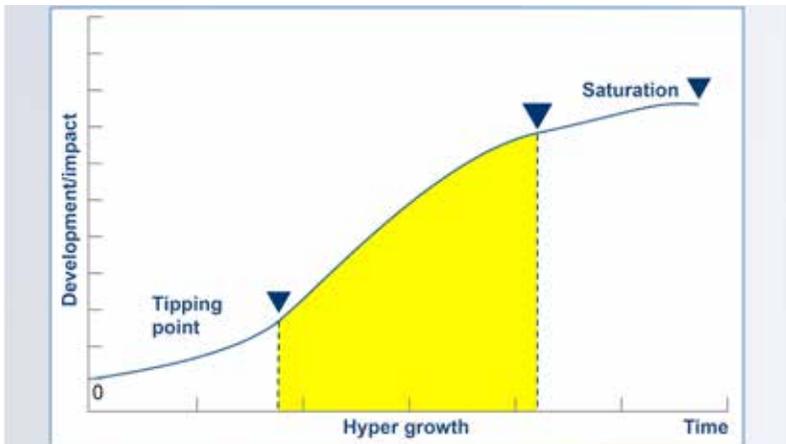


Source: van Dam, revised 2016.

- *Skill Growth*: work that challenges people to complete tasks outside of their comfort zone and can develop them for a potential future role.
- *Skill Enhancement*: work that places people outside their comfort zone. The new tasks are part of the scope of their existing role and therefore doesn't provide the opportunity to develop them for a different future role. For example, an administrative assistant learns to work with new technologies to support his/her daily work. This is important for the existing role but doesn't position the person for a very different role.
- *Skill Deepening*: work that is within peoples' comfort zone but can be relevant in a future role. This is typically a deepening of an existing skill-set. For example, a computer programmer deepens his/her programming skills and could be promoted in the future as *senior computer specialist*.
- *Skills Freeze*: work is completely in one's comfort zone and can be done almost on autopilot. This work doesn't help the person to get ready for a potential future role.

Finally, I would like to introduce the so-called *S-curve model* which is a career model that can be used to drive reflection on personal growth and development. The S-Curve guides people on the timing of personal renewal.<sup>111</sup> This model is used by McKinsey as an instrument to support the learning and development agenda, the performance dialogue, as well as the career progression of its consultants and partners globally. The S-curve model was developed in the 60s and shows how, why, and at what rate ideas and products spread throughout societies<sup>112</sup>.

FIGURE 33: S-CURVE



Source: Johnson, 2015.

When people try something new such as starting a new job, or receiving a promotion, or making a lateral move, they start their next S-curve and are faced with many new demands in the role such as leadership, colleagues, stakeholders, processes, information systems, organization culture, expectations, etc. At the beginning of the new curve, people are going through a steep learning curve in which they rapidly increase their knowledge and skills. Their progress and the business impact of their performance during this first stage of the S-curve is limited.

This stage reaches an inflection point where people's understanding, competence and confidence in the role suddenly accelerate very quickly and in which they have progressive impact on the business.

After being in a role for a certain time, people reach the upper flat part of the S-curve. At this stage, people have lost the excitement of the challenges of the role, personal learning and development has stalled, tasks and activities have become habits or are completed automatically, boredom has kicked in and their impact on the business has slowed down significantly.

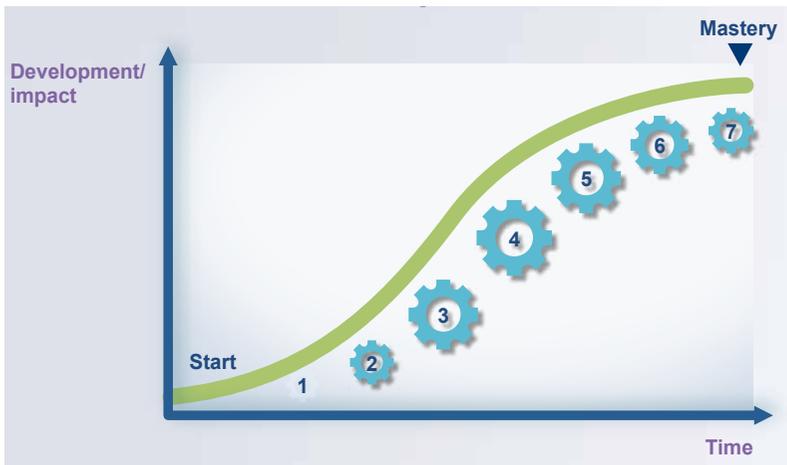
If people continue to stay in a role where they are no longer emotionally charged and motivated, there is a risk that they start doing a poor job, and as a consequence might be replaced.

The S-model suggests that people need to reflect on where they are in their S-curve and determine when it is time to move on and launch their new S-Curve, or *catch the next wave*.

Seven variables have been identified that can speed up or slow down the movement of individuals along the S-curve, including:<sup>113</sup>

- Take the right risks
- Play to your distinctive strengths
- Embrace constraints
- Battle entitlement
- Step back to grow
- Give failure its due
- Be discovery-driven

FIGURE 34: VARIABLES THAT IMPACT MOVEMENT ON THE S-CURVE



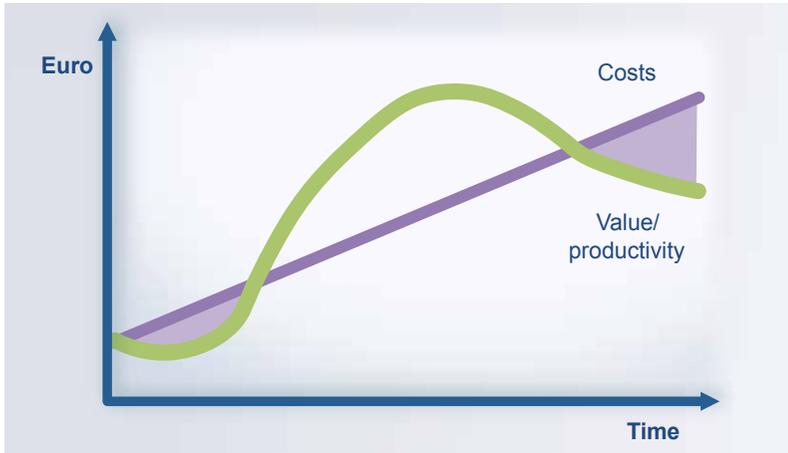
Source: Johnson, 2015.

Finally, a number of barriers may exist that might hinder people from stretching and as a consequence prevent them from unlocking their full potential. For example a low level of self-confidence will have a huge negative impact on people's ability to grow or learn. Low confidence is caused by a combination of harsh self-judgement, excessive expectations, a preoccupation with fear, or through a lack of experience or skills.<sup>114</sup> The key to authentic confidence is building *emotional flexibility* which can be increased by practicing dimensions from an *emotional flexibility model*<sup>115</sup> which includes: mindfulness; purpose and values; committed action; self in context/self-compassion; defusing; and acceptance.

Wharton professor Peter Cappelli suggests that companies invest in people's development when they are new in their role. As a result the productivity of people will grow and the value of human capital will increase. However, if the costs of labour grow out of line with growth in productivity – companies will experience losses and try to offer lower salaries or replace people with lower cost individuals.

Individuals will consider changing jobs if their human capital value exceeds the level of compensation or choose to stay in a role if their human capital value in the market is lower than their current compensation level.

FIGURE 35: COSTS AND PRODUCTIVITY WITHIN AN S-CURVE



Source: Cappelli, 2013.

#### 4. Build your personal brand & network

Having a brand that defines a person's best elements and identifies what differentiates them from others in a positive way, is key to achieving career goals and aspirations.

Everybody has a professional brand based on the impressions they leave behind. Brands communicate the value a person offers. Key elements of a personal brand include: authenticity; clear value proposition; your story; expertise; consistency; visibility; and connections.

In their book, *Leadership Brand: Developing Customer-Focused Leaders to Drive Performance and Build Lasting Value*, authors Dave Ulrich and Norm Smallwood describe 5 steps for shaping people's brand:

1. Determine the results you want to achieve in the next year
2. Decide what you wish to be known for
3. Define your identity
4. Construct your personal brand statement and test it
5. Make your brand identity real

Personal brands are everything but static and should evolve during people's careers. One of the challenges is that "*others judge us by what we have done, versus we judge ourselves by what we feel capable of doing.*"<sup>116</sup> As it is expected that many people will develop different skillsets and play different professional roles in their life, they need to *rebrand* themselves multiple times. Since expertise has become the new currency, people increasingly display their qualifications on social media sites such as LinkedIn through the use of *digital badges*. These are the electronic equivalent of paper certificates. Valuable digital badges can be earned from online learning vendors such as Coursera, edX, Linda.com, and Udemy, among others.

It is suggested that the hidden job market accounts for nearly 80 percent of total vacancies.<sup>117</sup> Typically, before a job gets advertised, hiring managers have reached out to their network whether they know of anyone who is a good fit. Thus, finding a future job or new assignment is one of the reasons why people are building strong networks often supported by social media platforms like LinkedIn which has over 450 million members.<sup>118</sup>

In addition, good networks are beneficial in keeping people informed, make them more innovative, and provide a platform where they can learn new things and gain a sounding board, among others.<sup>119</sup>

It is argued that people should develop diverse networks because diverse people can provide different connections, insights and career opportunities.<sup>120</sup>

## 5. Own your development

The relationship between the employer and employee has been redefined in the 21<sup>st</sup> Century. The days of job security and lifelong employment don't exist anymore and it is expected that people will work for many organizations and/or will be self-employed. Also gone are the days that an employer would prescribe people's personal development paths and careers.

As stated before – investing in personal development and growth make people more valuable, set them up for future roles, and provide pay-offs that will enrich people's lives.

FIGURE 36: OWN YOUR DEVELOPMENT



Source: van Dam, 2016.

Conditions for owning your development include:

- *Create and execute learning goals*

In order to become continually successful, people need to ask themselves: “How can I ensure that I am more valuable at the end of a year than I was at the beginning?” When creating your learning goals, you start by assessing your current knowledge and expertise, and identify competency gaps.

Second, people should plan to execute relentlessly on the most important learning goals because this is a competitive advantage. Unfortunately, too many people focus only on quick wins.<sup>121</sup>

- *Work with mentors and seek feedback*

Mentors are mostly people who guide a less experienced person by building trust and modeling positive behaviors. Mentors are interested in one's long-term personal and professional development and it is critical to have mentors inside and outside of a company. Additionally, feedback from supervisors, peers, direct reports, customers/clients is a critical component of professional development. Mention to different stakeholders that you are open for feedback and set up formal check-ins to review your work and collect feedback.

- *Stay vital*

One important component that can contribute significantly to people's development is their ability to stay vital and make this a priority. It is strongly recommended that people should start early in life to pay attention to: exercise; nutrition; relaxation (e.g. mindfulness, yoga, etc.); and sleep. Sufficient sleep has a huge impact on our ability to acquire, retain and retrieve knowledge. Other areas that sleep affects include: attention and concentration; creativity; development of insight; pattern recognition; decision making; emotional reactivity; socio-emotional processing; and developing trusted relationships.<sup>122</sup>

- *Measure progress*

It is important that people periodically reflect and assess the progress that they are making periodically. Learning journals or logs where people track what they are learning has been found to be extremely valuable.

- *Make personal investments*

As discussed in this book, there is a lot of evidence that the required learning

for individuals, who want to retain a market relevant skillset, exceeds the amount of funded formal and informal learning hours that most people receive from many organizations. Therefore, I argue that people need to make (more) personal time and financial investments in their growth and development.

In their book, *Immunity to Change: How to Overcome It and Unlock Potential in Yourself and Your Organization (1996)*, Harvard Professor Robert Kegan and Lisa Lahey suggest that you will know that people are taking ownership of their development if they can tell you: “What is one thing you are working on that will require that you grow to accomplish it?”:

- How they are working on it?
- Who else knows and cares about it?
- Why does this matter to them?

## 6. Do what you love

*“Your time is limited, so don’t waste it living someone else’s life. Don’t be trapped by dogma – which is living with the results of other people’s thinking. Don’t let the noise of others opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition.”*  
Steve Jobs

People spend a large portion of their day at work and will be active in the workforce for 40-50 years. It is invaluable that people do what they love because this has a huge impact on their health and well-being.

*Ikigai* is a Japanese concept meaning *a reason for being or a life worth living*, which represents all elements of life including: work; career; hobbies; relationships; friendships; spirituality; and so on. The discovery of one’s *ikigai* brings satisfaction and provides a meaning to live.<sup>123</sup> A study among 43,391 Japanese adults showed that the risk from all-cause mortality was significantly higher among people who did not find a sense of *ikigai* as compared with people who found a sense of *ikigai*.<sup>124</sup>

FIGURE 37: IKIGAI: THE REASON YOU GET UP IN THE MORNING



Source: Sone et al., 2008.

Ikigai can be achieved by answering four distinctive questions<sup>125</sup>:

1. *What do you love?*

Irrespective of all other factors, what are the things you love to do? You probably are aware of these already, though you may not know what to do about it quite yet.

2. *What does the world needs?*

A lot when you think about it. There are many problems across the world that need to be solved. If you can find one that interests you, it will guide you.

3. *What can you be paid for?*

Pretty much anything. You just need to find people who need what you are selling. You may need to get a bit creative, but there is something of value within the things you love and what the world needs.

#### 4. What are you good at?

Finally, everyone typically has some traits or skills they excel at. It is critical to know your unique strengths as well as areas for personal growth and development.

The intersection of all these insights is where people achieve ikigai. Of course, this is a journey in itself and it may take quite some time for people to realize their passion. The meaning of work depends on how we view our work, our motivation for work as well as the objective of the work. The following table shows three different ways to look at meaning of work.

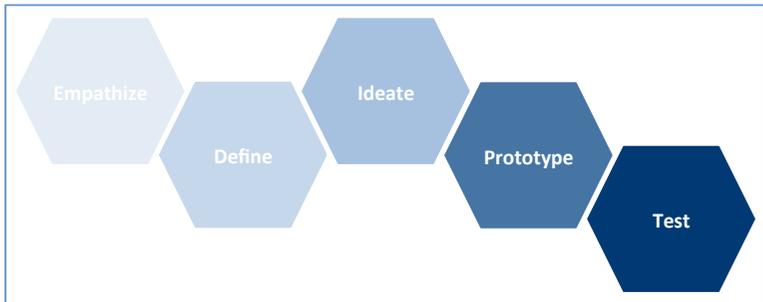
MEANING OF WORK	MOTIVATION	OBJECTIVE
A Job	Financial and material rewards	Obtain financial resources to engage in another activity e.g. <i>“I want to purchase a new car.”</i>
A Career	Success	Achieve personal growth recognition, and capability development, e.g. <i>“I want to publish a book.”</i>
A Calling	The work itself	Work for a great good or cause beyond personal benefit or reward, e.g. <i>“I care deeply about what I am doing.”</i>

Although organizations have a great responsibility to provide a context for meaning, there is so much an individual can do by creating a calling for themselves.

As suggested, exploring our career purpose, meaning and passion is not easy. Stanford faculty Dave Adams and Bill Burnell (2016) have been applying the popular design thinking approach to lives and careers in their book *Design Your Life*. The content of this book has been taught and researched at Stanford. They have identified five things that people can do to better design their life.<sup>126</sup>

1. *Be curious* – Studies have shown that curiosity primes our brain for learning new things.
2. *Try stuff* - Experimentation of prototyping will test assumptions.
3. *Reframe problems* – Cognitive biases can limit people’s thinking and as a consequence restrict choices. By reframing problems people can often look at situations in a new light and come up with better solutions.
4. *Know it is a process* – A focus on process versus outcome will allow people to gain something from every eventuality, good or bad.
5. *Ask for help* – Design and invention are increasingly collaborative processes, and designing your life is not different.

**FIGURE 38: DESIGN THINKING METHODOLOGY**



Source: [dschool.stanford.edu](https://dschool.stanford.edu).



# IN CONCLUSION

*We are what we think. All that we are arises with our thoughts. With our thoughts we make the world.*

Gautama Buddha

My great-great-great grandfather Matijs van Dam worked at least 6 days a week in agriculture. At that time, the workweek for most employees in different sectors was over 75 hours.

In 1960 a law was passed in the Netherlands which established a work-free Saturday. (This had already occurred in the USA in 1954.) Since then the workweek has been reduced from about 48 hours to 32 hours in some industries. Today the workweek varies in most sectors between 36 -40 hours.<sup>127</sup> According to 2015 statistics from the OECD, the Netherlands (1419 hours) and Germany (1371 hours) are countries with the lowest average annual working hours per worker, compared with for example 1790 hours in the US.<sup>128</sup>

I argue that the demands of the Fourth Industrial Revolution combined with an estimated working life of 45+ years, requires people to upskill and reskill themselves constantly. People need to embrace *lifelong learner mindsets* and make additional personal investments of 4-8 hours a week for learning. By doing so, a “*work & learning week*” of 40-48 hours would become the new normal.

The Netherlands does not have a culture in which employees recognize the need to make financial investments in their own development. 96% of investments in learning and development are made by employers<sup>129</sup>.

I anticipate that in the near future more people will increase their personal investments in learning and development in order to stay relevant in the workplace.

The Dutch government needs to provide more tax incentives for learning and development if they take the importance of lifelong learning serious. Furthermore, the Dutch, Education & Training Funds (O&O-fondsen) should be used to develop people for (future) roles in different industry sectors.

Employers should establish an organizational culture that embraces - *learning for all*- and help people to develop skillsets that are relevant for *current* and *future roles* inside or outside the organization. Companies should also professionalize and modernize the learning & development function and attract people in learning & development roles who have deep expertise and experience in this profession. A very strong business case justifies investments in people development.

In closure, lifelong learners are more successful professionally and lead happier, fulfilling lives. I am optimistic that more people will embrace mindsets of lifelong learners and that a growing number of organizations will establish human cultures in which people can continuously grow and flourish.



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# THE E-LEARNING FOR KIDS FOUNDATION

*What is the use of living, if it be not to strive for noble causes and to make this muddled world a better place for those who will live in it after we are gone?*

Winston Churchill

What chance does a child have today without a good primary education? In a world where quality education is taken for granted in order to acquire well-being and prosperity; we need to recognize that this is not the case for everyone. For example:

- More than 100 million children remain out of school (Source: UNFPA)
- More than 1 in 4 adults cannot read or write: 2/3 are women (Source: ActionAid)
- Some 46% of America's kindergarteners are coming to school at risk of failure (Source: US Department of Education)

The e-Learning for Kids Foundation provides free digital lessons for underprivileged children who are 5-12 years old. Our digital curriculum includes subjects such as mathematics, science, language arts, health-, life, environmental and computer skills.

We have developed and published over 800 digital lessons in English and a number of lessons have been translated in Spanish, French and Portuguese. Over 15 million children have benefitted from our digital lessons.

A big thank you for the e-Learning for Kids team:

- Pieter Boelens
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*There is no friend as loyal as a book.*

Ernest Hemingway

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